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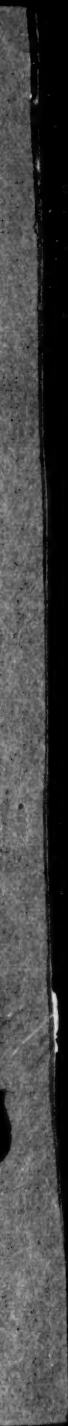
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The Journal
OF THE
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VOL. XXXVI.

DECEMBER, 1892.

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FOREIGN SECTION.

THIS portion of the Number, hitherto the Occasional Notes, has now become the Foreign Section, and is reserved for articles, either original or compiled, on professional subjects connected with Foreign Naval and Military matters; also for notices of Professional Books, either Foreign or English.

It is requested that articles, communications, and books for review may be addressed to the Editor of the Journal at the Royal United Service Institution, Whitehall Yard, London, S.W.

As with this issue terminates my sixteen years' editorial connection with the Journal, I desire to offer my sincere thanks to the Naval and Military Officers who have so kindly assisted me during that period by the contribution of original articles or translations, and also to those who have from time to time given to the Journal their honest and candid opinion of books sent to the Journal for review.

I also desire to express my obligations to my colleague, Captain Bonghey Burgess, for much assistance, kindly and cordially rendered.

LONSDALE HALE,
Colonel R.E. ret.

THE STRATEGIC POSITION IN THE MEDITERRANEAN.

Translated, by permission, by Commander H. GARBETT.¹

For some time past there has been an uneasy feeling, which has found expression in the Press of Austria, Germany, and Italy, that the strategic position in the Mediterranean is undergoing a change, which, while tending to strengthen France and give her a commanding position in those waters, will prove detrimental to the interests of England and the other Powers.

The reason for this disquietude is to be found principally in the use France is making of her Protectorate over Tunis to construct at Biserta a strongly fortified naval port of the first importance. The construction of this port, which from its position completely commands the route between Gibraltar and the Suez Canal, is a new factor in the strategic position which England can hardly afford to overlook. For many years there has been considerable difference of opinion as to the feasibility or otherwise of using the Mediterranean route to the East in the event of this country unfortunately becoming involved in a war with France, and the creation of a naval stronghold at Biserta will certainly render the task of defending that route more difficult. It may therefore be of interest if I lay before readers of the Journal articles which have lately appeared on this subject in two of the principal Continental papers, viz., the "Norddeutsche Allgemeine Zeitung," the leading Berlin organ, and in the "Neue Freie Presse," the principal Vienna journal.

There is no doubt in France a party, of which the late M. Gabriel Charmes was a distinguished member, which includes what is known as the "Jeune École" in the French Navy, and numbers in its ranks distinguished Officers, such as Admirals Aube, Réveillère, and others, whose avowed aim is to make the Mediterranean, or at least that portion of it included between Gibraltar and a line drawn from Toulon through Corsica to Biserta, a French lake; it is hoped to make this Toulon—Corsica—Biserta line an impregnable base from which to operate with effect against Italy and ourselves. Another struggle with their "hereditary enemy," as England is termed in "La Guerre contre l'Angleterre," by the authors of "Les Guerres Navales de Demain," is confidently assumed as being as probable in the near future as one with Germany and Italy. Although the authors of

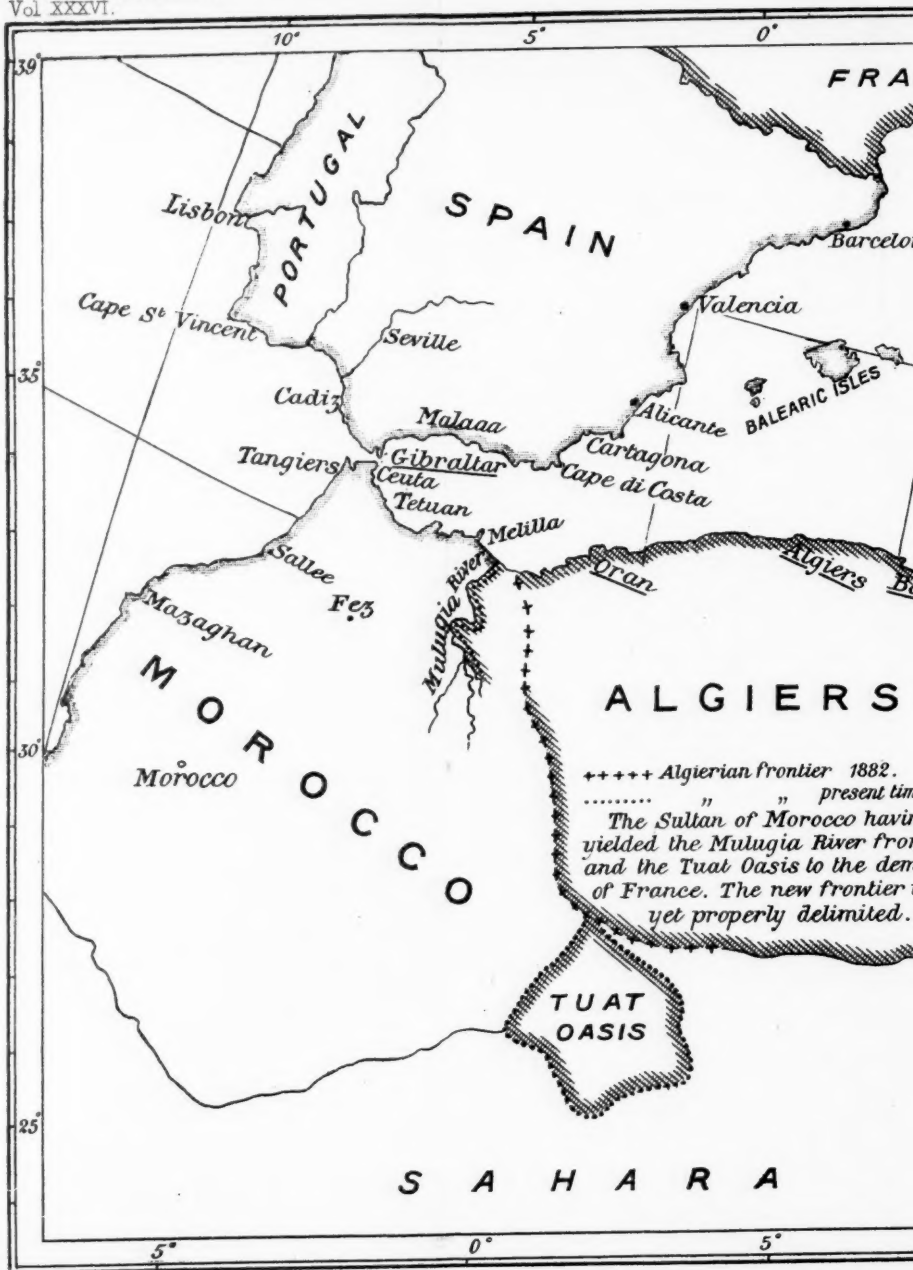
¹ From the "Norddeutsche Allgemeine Zeitung," of Berlin, the "Neue Freie Presse," of Vienna, an article in the "Nouvelle Revue," by Commandant Z., "La Défense Maritime de la Corse," and précis of articles in the "Jahrbücher für die Armee und Marine," by Lieutenant-Colonel von Hildebrandt and the "Neue Militärische Blätter."

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the above-mentioned work do not apparently consider that the French Fleet is likely to be a match for the English, yet they count upon the possibility, if the English Fleet is distributed over the Mediterranean, that a strong squadron of their own at Biserta, operating as it would on an inner line against a widely separated enemy, would be able to strike a decisive blow against the English division in the East before assistance could come up from Gibraltar, for instance.

In this connection the position of Corsica in the strategic line has been warmly discussed, both in the Chambers in the debates on the French Naval Budget, and in naval circles. Italy, by the care and money which she has spent during the last few years on the fortifications of Maddalena, an island lying almost on the extreme north-east point of Sardinia, closing a fine bay, and on the establishment there of a strong naval station which commands the Straits of Bonifacio, has certainly done her best to neutralize the strategic value of Corsica as a base from which the western seaboard of the peninsula can be threatened. The Ministry of Marine and French naval opinion are now quite awake to that fact, and an article, therefore, on "*La Défense Maritime de la Corse*," by Commandant Z., a member of the "*Jeune École*," and one of the authors of "*Les Guerres Navales de Demain*," which appeared in a late number of the "*Nouvelle Revue*," may also prove of interest.—H. G.

"The position of Carthage," writes the "*Norddeutsche*," "was without any doubt an incomparably more favourable one for maintaining command of the Mediterranean than that of Rome and its unimportant harbour of Ostia, and, indeed, it was owing to this favourable position, in conjunction with the statesmanship of its rulers and the activity and skill as seamen of its population, that the Punic capital was enabled to remain for so long the rival of Rome as mistress of those seas.

"Although not situated on the same site as old Carthage, the ruins of which lie some 8 miles off in a north-westerly direction in the neighbourhood of Cape Blanc, Biserta, the new base of the French Fleet in the Mediterranean, possesses a position for a war harbour so favoured by Nature that it not only vies with that of Carthage in every respect, but is superior in many points. A natural basin, over 2 German miles long and 1 broad, with a uniform depth of 40 ft., completely secure both from the force of the sea and from a hostile bombardment; the harbour of Biserta connected with the sea by a navigable canal 7.5 km. long will afford shelter to all the fleets of the world. This canal has been dredged out to allow the passage of ships drawing 30 ft. Two huge moles, each 1 km. long, are intended to protect the entrance into the canal. The Gulf of Biserta forms an advantageous approach to the harbour for a fleet, while the steep limestone cliffs of the surrounding coast render the fortification of the whole locality and the mouth of the harbour easy, as also of the town of Biserta, which is situated on the plateau. The position, in fact, possesses exceptional advantages for the establishment of a first-class naval station."

With regard to the strategic importance of this new French stronghold, Biserta appears to occupy a far more central position than Toulon, and in consequence of their propinquity it directly threatens the south and south-western coasts of Italy, Sicily, and Sardinia in the event of war between the two countries; in the second place, Biserta commands the great trade route from Gibraltar to the East, as well as of vessels proceeding to or coming from the Tyrrhenian Sea.

From Biserta it is easy to reach Sicily in 12 hours, Naples in 36 hours, and Maddalena in 24 hours, and a French squadron could reach in 36 hours any desired point on the coast of Sicily and most of the towns on the south-west coast of the peninsula and Sardinia.

If then the transformation of Biserta into a war harbour and station for the French Fleet affects most materially the military situation as far as the southern and south-western coasts of Italy are concerned, it is no less a matter of importance to England that the trade route through the Mediterranean should be commanded from such a base of operation so close as Biserta is.

The maritime position of Great Britain in the Mediterranean is threatened less by the fleets of her probable enemy than by the possibility afforded for the destruction of her trade and the interruption of the sea route to the East by ships issuing from secure harbours. Hostile squadrons will hardly be able to effect much against the strong fortresses of Malta and Gibraltar; but by attacks on the swarm of merchant ships which, even in war-time, would be passing between the Suez Canal and Gibraltar, cruisers issuing from Toulon, Algiers, and especially Biserta, would be able to inflict untold injury upon English trade. For such an onslaught on English ships by the French cruisers, Biserta affords a perfectly unique base. Formerly the possession of Gibraltar and Malta, and still later the occupation of Alexandria and Egypt, enabled England to command the route from the Atlantic to Suez; but to-day Biserta rivals Gibraltar and Malta in this respect, and it may be confidently asserted that the completion of this newly-created stronghold in 1894, as is the intention of the French Government, will necessitate, on the part of England, a very considerable increase to her naval strength in the Mediterranean if she is to maintain her supremacy in that sea.

The "Neue Freie Press," on the 1st of September last, calls attention to the same subject: "For some time past," it says, "a wrathful feeling has shown itself in the Italian Press at the feverish haste with which the French are pushing on the completion of the fortifications and the new harbour works at Biserta on the north coast of Tunis, which threaten alike the coasts of Sicily and Italy, Malta, and the English strategic route to India."

The international side of the question has also been partially discussed; but in the present state of our modern international law, it only occupies the second place. First stands the fact that a war harbour of the first rank is being built by France, and that the balance of power in the Mediterranean may consequently be altered

to the disadvantage of the "Triple Alliance." We remember that Prince Louis of Battenberg, Commander of the British cruiser "Scout," inspected the works in progress at Biserta, and expressed his conviction that the apprehensions entertained by Admiral Spratt in 1881 were not unfounded. The harbour of Biserta is only eighteen hours distant from Malta, and France manifestly intends to make it impregnable. Modern ships-of-war can reach the Sicilian coast from here in one night. The watchfulness and uneasiness of Italy and England have thus good grounds, and appear all the more intelligible, if the preliminary events of the present situation and the method of proceeding of the French are kept in view.

After the occupation of Tunis, France gave a formal promise not to convert Biserta into a war harbour, professing only to have commercial purposes in view. In the year 1886 a French Military Commission visited the coast, and soon afterwards a plan for its defence was worked out in Paris. The French Government then sent engineers to Biserta with orders to make surveys secretly, which were followed by the first Diplomatic representations on the part of the English Government. The French Cabinet still denied that it had any evil intentions; it did not feel quite secure yet in possession of Tunis, and did not then possess the patronage of Russia; since, however, they have had proofs of the favour of the Czar, the French have proceeded with more assurance, the old designs and plans have been brought out, and they have begun the construction of a war harbour of the largest dimensions. Before the Cronstadt fraternization all the French papers, without exception, were at the greatest pains to assure the world that there was no thought of anything but a mercantile port. The English and Italian remonstrances, and certain inquiries on the part of Germany, were alike met with a complete denial. Then followed a period of obstinate silence and of more energetic work, until the change in the situation created at Cronstadt gave France the courage to assert that Articles II and III of the Treaty of Bardo gave her the right to construct such a harbour. In this Treaty, France undertook the right and the duty of providing for the safety of Tunis and the protection of the Bey's dynasty. In vain were remonstrances that no one threatened Tunis and its Bey, and that in no case did this object justify the construction of a port at a cost of more than 15,000,000 fr. The voice of France has assumed a brusquer and more self-assertive tone, and the harbour of Biserta is now declared to be a work of "National Defence," and is destined to be the point of concentration of all the French maritime forces in the great, unavoidable, and decisive struggle for supremacy in the Mediterranean.

So the ancient Hippo, the most northern city of the Dark Continent, after a sleep of centuries, has again woke, and the political world suddenly hears of battles to be fought in the neighbourhood of the same spot where once Carthaginians and Romans strove for the mastery of the world.

In ancient times there was a large harbour with a deep and broad entrance, and several canals which, although they have since

become sanded up, render the construction of the present works much easier. Biserta is enclosed by two capes; in a southerly direction stretches the large so-called Lake of Biserta, 60 square km. in extent, which in days gone by served as a harbour, and is now again destined to become one of the principal ports of the world. It will hold the largest fleet, and is connected with the sea by means of a canal 60 m. broad, and which is already completed. A small bay adjoining this lake, and connected with it by a broad waterway, is destined for an auxiliary harbour, where ships damaged and under repair can find sufficient shelter. Of the two moles, each 3,000 ft. long, which, stretching into the sea, afford a secure entrance for ships, one is already half, and the other completely finished. A lighthouse is also being constructed upon the smaller peninsula of Sebra. When all these works are completed, to which must be added the fortifications in course of construction at the mouth of the deepened canal, and on the coast and adjoining highlands, Biserta will have become one of the largest and strongest of the war harbours of the world. High mountains protect it from the north and north-west, and the precipitous coast makes a landing almost impossible. The ruins of the ancient moles serve as foundations for the new, and the works are being pushed on with haste and successfully, at the time when Lord Salisbury and Crispi have been driven from power. In two years the French Government hope to have the work completed, but before then they will also have taken in hand the construction and fortification of the smaller harbours at Susa, Sfax, and Tabes.

The Italians look upon this state of things with great seriousness, and believe that its gravity will also be recognized in England. There can be no doubt that the French Government, under the pretext of making secure the communications between France and Algeria, will create in Tunis a safe base of operations, which, in conjunction with the greater preparedness for war, to be carried into effect by means of the new Naval Budget and the strength of the powerful fleet already completely equipped, will render it possible for France to attain supremacy over Italy and England. It is also considered in Berlin that Biserta will be a point of supreme military importance in the event of a war between France and the three Allied Powers, because it already constitutes a danger for the Italian Fleet, and threatens the coast of Sicily and Southern Italy. It strengthens the base of operations at Toulon by the creation of a new one. In presence of the concentration of superior French naval forces in Algeria and Tunis, it constitutes a real danger for England, threatening her communications with India and her Colonies, besides forcing her to divide her Fleet and keep two squadrons in readiness, one at Gibraltar and another at Malta. Sanguine French Officers are already counting upon the great advantage a strong French squadron at Biserta would have, as it would be able to operate on an inner line against a widely separated enemy, and could strike a decisive blow against the English squadron at Malta before the second could come up from Gibraltar, to say nothing of the "guerres navales" which, since the construction of Biserta began, the French "sea bears" are

continually planning against the Italian Fleet. Only last winter a French Admiral on the active list advocated the bombardment of all the Italian coast towns in turn with melinite shells, and the landing 40,000 Turcos in Sicily from Biserta and other African ports. And the coming war forms now in a time of peace the principal topic of conversation in the French barracks.

More and more does the consolidation of Italy, and her entrance into the Triple Alliance, arouse the jealousy of France. It is precisely in Tunis that Italian influence is a very disturbing element for France and her Mediterranean position. It is 10 years since France seized Tunis, after the recall of Sir Thomas Wood and the imprudence of the Italian Consul, Maccio, and the intimidation of Cairoli; on the other hand, the result of the action of France was to throw Italy into the arms of Germany and Austria, in order to find security in the Triple Alliance. Ten years have passed since the usurpation of the Regency in Tunis by the French, and their Protectorate over the country plays a very important part in the European relations of France and Italy, as well as those of Germany and Austria.

Thus, the Tunisian question seems destined to cement and maintain the Triple Alliance. Italy is now the principal hindrance to the development of the French power in Tunis, where, for the most part, the population is of Italian nationality. The southern Italians, accustomed to heat, abstinence, scanty food, and small gains, make good colonists, and they are five times as numerous as the French, and in time of war may prove a real danger for France.

The Tunisian question is only one of the great international disturbing elements, and although Biserta is only one point of the great surface upon which antagonistic interests are in imminent danger of clashing, and again disturbing the peace of the world, it is quite possible that the fate of Europe may yet be decided in the Bay of Carthage.

The only spot, writes Commandant Z., in the "Nouvelle Revue," where our flag flies between Algiers and Marseilles, Toulon and Biserta, Corsica constitutes the strategic bond by which the coasts of Languedoc and Provence are united to the shores of that French Africa which Prévost-Paradol showed us twenty-five years ago to be the last resource where our power would have an opportunity of displaying itself to the world.¹

In case of war against the "Triple Alliance," this island, by its situation, 50 miles from Civita Vecchia, is the natural base from which our squadron would undertake offensive operations against the left flank of Italy. If again we look at it from the point of view of a war with England, which is always possible, its defensive value is incomparable, and strikes the eyes even of those persons who are unversed in matters appertaining to naval warfare.

¹ "May the day soon come when our fellow-citizens, too confined in French Africa, will flow over into Morocco and Tunis, and will then found that Mediterranean Empire which will not only be a satisfaction for our pride, but which will certainly in the future state of the world be the last resource of our greatness."—Prévost-Paradol, "La France Nouvelle," année 1867.

For all these reasons, since our great reverse, and, above all, since the House of Savoy entered into alliance with the two Empires of Central Europe, Corsica ought to have been a source of constant attention on our part. Unfortunately, so far from making it the object of solicitude, the French Admiralty, as every one knows, has appeared to ignore the very existence of this admirable strategic position. In 1886, sixteen years after the lesson of Sedan, as far as the Admiralty were concerned, there was no such place as Corsica. Neither the excitement created by the publication of Admiral Aube's celebrated treatise, "*Italy and the Levant*," nor even the extensive works carried out at Maddalena,¹ were successful in opening the eyes of the men to whom the sole direction of our Navy was then entrusted.

When Admiral Aube came to the Ministry in January, 1866, Corsica was one of his first cares; and we can never forget with what sad astonishment he ascertained that absolutely everything still remained to be done there. Unhappily, here, as elsewhere, he had not time to complete his work. But when he quitted the Ministry, at the fall of the Goblet Cabinet (May, 1887), the question, thanks to his efforts, had made great progress.

1st. The plans and Estimates necessary for securing the "*Défense Fixe*" had been drawn up, thanks to the Navy, and approved at the Ministry of War.

2nd. The organization of the "*Défense Mobile*" had been seriously taken in hand, since it already comprised an "*aviso*" and several torpedo-boats, under the orders of Rear-Admiral Regnault de Presmenil.

3rd. The plans for building a harbour of refuge for the squadron at Porto-Vecchio had been under consideration.

The successors of Admiral Aube, MM. Krantz and Barbey, have pigeon-holed all these papers, and they have not been seen again; they have suppressed the gun- and torpedo-boats, and recalled Admiral de Prémenil.

The abandonment was as complete as possible, when last year

¹ From a tactical point of view, the position of Maddalena permits an Italian squadron to debouch, according to circumstances, either to the north-west or to the east, and to completely close the Straits of Bonifacio to an adversary. The defensive works constructed there during the last few years have had for their object to protect from a *coup de main* the basin where the fleet would be anchored, and to prevent an enemy gaining access to it. Maddalena has not only become a closed port, with the power of rendering the Straits impassable, but also combines all the conditions for becoming a real *place d'armes* with an entrenched camp. The central position is protected by groups of little islands and reefs, which render the approach difficult for large ships; further, towards Sirocco, the south point of Caprera forms a second position, which covers the Bay of Arsachera, and this bay has direct communication with the plateau of Ozieri, the site of the entrenched camp established for the protection of Sardinia. Maddalena is the strategic centre *par excellence* of that "counter-offensive" by which the Italian Fleet can defend the whole Tyrrhenian basin, and nothing has been neglected which will assist in placing the position in a condition fit for occupying the rôle it will be called on to play in the event of war. There are 70,000 tons of coal stored there.

M. Henri Brisson was nominated chairman of the Committee to report on the naval Budget.

M. Brisson did not hesitate to take up on his own account a part of Admiral Aube's programme; he called attention to Porto-Vecchio, and proposed to establish a station for light torpedo-boats on the island, but he was soon forced to resign, and his successor, M. Cochery, a slave of the bureaux, allowed the lamentable *status quo* to continue. However, when the budget was discussed before the Chamber, M. Ed. Lockroy, inspired by the ideas of Admiral Aube, proposed an amendment in these words:—

"Clause 24 (Extraordinary works for the defence of the military ports) to reduce by 950,000 francs. To substitute in same clause, 'For creation of a port of refuge in Corsica,' 950,000 francs."

M. Lockroy made no secret that, in his opinion, these 950,000 francs ought to be deducted from the sums destined for the scandalous works of the port of Cherbourg, and nothing could be more just, for the millions thrown into the bottom of this "indefensible" harbour are simply done so in order to serve electoral interests. The amendment was accepted on principle by the Minister, M. Barbey, who showed in his reply that his administration had never troubled itself in however small a degree about this grave matter:—

"M. Barbey: 'I have told the Honourable M. Lockroy, that in principle I am not opposed to his suggestion; but I have pointed out to him at the same time that there is a Military Government in Corsica, under whose orders the Senior Naval Officer is placed. I can do nothing without consulting the Government, and particularly the Ministers of War and Public Works, with regard to the proposal of M. Lockroy; but I will take upon myself to satisfy his wish by putting the question before the General Staff of my department, and by submitting the proposal to the consideration of my colleagues.'"
("Officiel," 11th December, 1891.)

Satisfied with having forced the Minister of Marine to direct his attention towards a problem the prompt solution of which is of such great importance to the naval defence of the country, M. Lockroy thought he ought to withdraw his amendment. We think the distinguished Deputy was wrong in so doing, for two reasons: First, because we can foresee that M. Barbey will not keep his engagements; then, again, because it is inconceivable that a French Chamber would dare to thrust into the background a proposition so evidently in the interest of the nation.

Be that as it may, the question, at the time at which we write, has not advanced a step. But M. Barbey has been replaced by M. Godefroy Cavaignac, and certain indications allow us to believe that the new Administration is not indisposed to resume in Corsica the interrupted work of Admiral Aube. The moment then seems to us favourable for pointing out roughly what will be expedient in order to place the island in a position to fulfil its part in the wars of to-morrow.

It is indisputable that the next war will open in the Mediterranean by a *coup de main* upon Corsica. All the dispositions of Italy for

this have been taken, and well taken, for some time past. From this point of view the two places most menaced are evidently Bastia and Bonifacio.

The vicinity of the island of Elba warrants very strongly an attempt upon Bastia. The enemy will disembark either to the north of the town or on the coast to the west at the bottom of the Gulf of St. Florent. St. Florent will, without doubt, be preferred, because from there, not only is Bastia menaced, but also the position of Rousse island, Calvi, Corti, and all the rich peninsula of Cape Corsica, which Bastia once occupied will naturally also fall.

Calvi has no outlets; it ought to be replaced by Rousse, the harbour and roadstead of which are far superior to those of Calvi.

Ajaccio, as a maritime station, is of great importance; the largest ships can enter the road and landing is easy. From the point of view of an occupation of the island, the place has only a secondary importance on account of the small number and difficulty of the roads leading into the interior.

Propriano has a certain value, in so far that this small port, which offers good anchorage, might be chosen as a place of disembarkation in order to effect a *coup de main* against Sartène, which is only some 14 km. distant. The other points of the coast can be put on one side, as the "Défense Mobile" will suffice to guard them. It must be noted, however, that the Gulf of Sagone might serve as a place of disembarkation to an enterprising enemy for a force whose "objectif" was Ajaccio.

Bonifacio is the place which ought to be put in a state of defence with as little delay as possible. Its harbour, narrow and deep as a fiord, is the natural refuge of a flotilla detailed to watch the Straits and southern extremity of Corsica.

This portion of the island comprised between Bonifacio on the west and Santa Manza on the east forms a triangle, almost isolated in consequence of its remoteness and the paucity of the means of communication with the interior. In its present state of defence a disembarkation at Santa Manza, with Bonifacio for its "objectif," could be effected with success. Once master of Bonifacio, the enemy, without advancing further, could confine himself to holding the whole of the Strait; and the vicinity of Maddalena would render any attempt to dislodge him from the sea extremely hazardous.

The defences of Bonifacio are at present ridiculously inadequate, especially if they are compared with the means of attack concentrated at Maddalena and on the plateau of Ozieri by the Italian Admiralty. It is absolutely necessary to establish in the Straits a complete defensive system, of which Bonifacio would serve as the base. Not counting the "Défense Mobile," advantage must be taken of the neighbouring heights from Cape Pertusato and the islands Lavezzi and Cavallo, to construct powerful batteries which will command the Straits in front of Maddalena.

On the land side a work must be thrown up at the junction of the roads from Ajaccio and Bastia strong enough to check any attack attempted through a landing at Santa Manza.

To the north of Santa Manza, on the east coast, lies the fine Gulf of Porto-Vecchio, to which we will again refer.

From Porto-Vecchio to Bastia, the coast is low, marshy, and almost uninhabited; adjoining is the lake of Urbino, which, in ancient times, was an active harbour, and which certain Officers imagine might be made useful for the Fleet in time of war: an idea which, in the present state of things, does not appear very practicable.

Having now pointed out the places on the Corsican coast where our enemies might attempt a *coup de main*, we will now consider the same coast in the light of a *point d'appui* for our naval forces.

The anchorage in some parts of Bastia is not very good, and often vessels cannot lie there when the wind is between N.E. and S.E.; they then have to take refuge at Saint Florent. At both places ships at anchor are liable to be surprised by torpedo-boats. Nevertheless batteries are necessary at Bastia to resist an attack on the place; and at Saint Florent to prevent any disembarkation.

A fort ought to be constructed on Rousse Island, less to protect the anchorage, which a squadron would probably never use in war, as to prevent any attempt by the enemy.

Ajaccio, an excellent anchorage, ought to be fortified both on its land and sea fronts. The sooner this is done the better, because at this moment the place is incapable of offering resistance to a landing combined with an attack from a fleet. A coast battery is also necessary at Propriano.

The "Défense Fixe" of Bonifacio ought to be completed in the manner we have already mentioned. Unfortunately, the port is too small to shelter a squadron, which would have to make for Porto-Vecchio, on the east coast, a fine harbour of refuge, and at the same time a strategic centre of the first order. It is a fact scarcely credible, the Gulf of Porto-Vecchio is completely abandoned!

During the Ministry of Admiral Aube two projects were discussed, which we ask permission to briefly explain. The first proposal was to close the grand roadstead between the points Saint Cyprien and La Chiappa by a breakwater divided into three: the first portion, 1,500 m. in length, reaching from the tower of Chiapino to that of Pécoralla, would be built in a mean depth of 23 m.; the second portion, 900 m. long, starting from the tower of Pécoralla, would run out towards the Saint Cyprien lighthouse to a depth of 15 m.; the third, 230 m. long, would be a prolongation of the second, between Saint Cyprien Light, and a depth of 10 m., with a mean depth of 8 m. There would thus be two passages, 200 m. long, each with a depth of 10 m.; the one from Point Chiappa to the lower Chiapino, the other between the second and third portions of the breakwater. The cost of these breakwaters can be calculated approximately by the formula $2h^2$, at the rate of 10 fr. to the cubic metre.

First breakwater, cost	$2 \times 22^2 \times 1,500 \times 10 =$	14,520,000 francs.
Second " 	$2 \times 14^2 \times 900 \times 10 =$	3,528,000 "
Third " 	$2 \times 8^2 \times 200 \times 10 =$	256,000 "
Total		18,304,000 francs.

To this sum would have to be added the expense of dredging out the small roadstead to a depth of 10 m., an expense which, on account of the nature of the bottom, would come to 7 millions of francs for 85 millions of cubic metres, making a total expenditure of 25 million francs.

The other project is more attractive, on account of the moderate cost. We start on the assumption that Porto-Vecchio is destined to serve both as a base of operations from which a French squadron can operate against the left flank of Italy, and as a refuge for that squadron after an action, whatever the result of that action may be. We say, whatever the result may be, because it seems evident to us that, after an action, the victor will in all probability stand in need of a shelter to repair damages, and ought not in any case to pass the night at sea, exposed under unfavourable conditions to the attacks of torpedo-boats.

By the second project, a harbour of refuge would be constructed sufficiently large to receive 12 battle-ships, 12 large cruisers, and as many small vessels of light draught as may be considered necessary.

The small roadstead would alone be protected by two breakwaters: the largest, on the north, drawn in a little in the west from the Point Benedetto, passes over a shoal, but at its northern limit has a depth of 10 m.; the other starts in the north-east, from the small Bay of Vizza, and at its southern limit has also a depth of 10 m.; between the two breakwaters would be a channel 200 m. wide. The first breakwater would be 900 m. long, with a mean depth of 5 m.; the second only 200 m., also with a mean depth of 5 m. Calculating the cost, as in the first project, the expense would only be 550,000 francs.

The dredging out of the bottom to a depth of 10 m., necessary for laying down the moorings for twenty-four large ships, as well as of the channel to the anchorage, which would be 1,200 m. long and 150 m. wide, would entail a further expenditure of 3,500,000 francs, bringing the whole cost up to 4,050,000 francs.

By laying down between the points Saint Cyprien and Chiappa two lines of submarine mines, and erecting on the heights some powerful batteries, an enemy would be kept at a distance. On the other hand, the part of the harbour where our ships would lie is masked from the side of the sea by the points d'Arena, Viazza, and the cliff which lies to the southward of those points; the ships at the anchorage would therefore not be visible from the sea.

The country to the north of Porto-Vecchio is very marshy, and covered with thickets, in which lie a thick bed of dead leaves; consequently the country is malarious to such an extent that in the hot season the inhabitants move up to Quenza, in the mountains. The cost of draining and making the plains salubrious would come to some 60,000 francs, according to an estimate made on the spot.

Thus for less than 10 millions Porto-Vecchio can be made an impregnable port of refuge, of which our squadrons in the Mediterranean stand so much in need, and from which they will be in a position either to act against the adjoining coast of Italy or maintain our communications with our possessions in Africa.

We have seen that the successors of Admiral Aube have done away with the "Défense Mobile," the organization of which was carried on from the commencement of 1886 up to May, 1887. It is necessary that it should be reconstituted without any further delay.

The "Défense Mobile" of a strategical position such as Corsica, at one and the same time, both offensive and defensive, ought to comprise, in time of peace, at least 5 fast cruisers and 24 torpedo-boats, fully equipped and in commission; in time of war this number would be doubled. The "Défense Mobile" should be divided into two groups: one in the north, with headquarters at Saint Florent; the other in the south, in the Straits of Bonifacio.

We have already mentioned that the two points where a landing can be most successfully attempted are Santa Manza and Saint Florent. The Bay of Santa Manza is only 15 miles from Maddalena. This distance can be traversed in an hour by transports with troops, whose numbers could be much reduced on account of the small distance which separates the base of operations from the point of attack and disembarkation. Six large steamers of the Rubattino Company will be sufficient to convey 15,000 men, drawn from the plateau of Ozieri and embarked at Maddalena; and it is evident that this operation could be completed before our squadron was in a position to oppose it. The actual concentration of our forces in the Mediterranean at one place leaves no doubt on this point. On the other hand, even in the absence of our squadron, the difficulties in the way of landing will be almost insurmountable, provided that we have in the Straits a dozen "torpilleurs" always ready for action, that the approaches to Bonifacio are armed with batteries powerful enough to prevent hostile cruisers and torpedo-catchers from destroying our flotilla at their anchorage, and if the scouting at sea by our fast "avisos" is organized as it ought to be, the Commandant of the "Défense Mobile" should be made aware immediately of any movements made by ships anchored at Maddalena.

In our opinion, it is from Saint Florent that Bastia will be threatened; therefore it is at Saint Florent that the "Défense Mobile" should be stationed. Surveillance there will be more difficult than in the Straits, because the distance from Elba is more than from Maddalena to Bonifacio (40 miles instead of 15); and then there are other reasons which militate in favour of Saint Florent as against Bastia. During fresh north-east winds, which are very frequent, torpedo-boats could not lie in the old port of Bastia, as they would be unable to leave the harbour if it was blowing fresh from that quarter. Imagine, in time of war, the situation of the Captains of the "Défense Mobile" receiving orders to put to sea, to share in some joint operations, and kept at anchor in spite of themselves, not by the state of the sea outside but by local difficulties!

Independently of the standing "Défense Mobile," a strong division of the active squadron of the Mediterranean ought to be detached to Corsica; there should be at least three of the coast-defence ironclads of the "Caïman" type, and three cruisers. To a certain extent this

would lessen the danger likely to result from the excessive concentration of our naval forces in the Mediterranean.

All reflecting and clear-sighted men are protesting against this insensate concentration, and demand that, with the vessels of which we can dispose to-day at Toulon, three independent squadrons should be formed :—

The Home Squadron, with Toulon as its headquarters.

The Squadron of Corsica, with Ajaccio as headquarters, and Porto-Vecchio as secondary base.

The African and Levant Squadron, at Biserta and Algiers.

Colonel von Hildebrandt, of the German Army, also discusses the Mediterranean question in an article in the "Jahrbucher für die Deutsche Armee und Marine" for August, entitled "The Struggle for Supremacy in the Mediterranean." A short *résumé* is all that is necessary. The Colonel dates "the foundation of the present condition of affairs from the year 1713, when England, by the Treaty of Utrecht, was confirmed in the possession of Gibraltar, and from that time began to assume the position of a Mediterranean Power."

At the present time the Moroccan and Egyptian questions have directed general attention to the North African Coast territory, in consequence of the many conflicting interests centering there. For several years past France has pursued a steady policy of expansion from Algeria, not only into the interior towards the Western Soudan, but along the Mediterranean coast. By the seizure of Tunis, French power has perceptibly increased over what is already termed by many the "French Lake," and this increase of strength is mainly due to the construction and fortification of the large harbour of Biserta, a point which strategically and politically is of the first importance. This new naval station of France, with the harbour of Goletta, at Tunis, may be said to command in all directions the great sea routes in the Mediterranean, and forms a base of the utmost value from which to carry on warlike operations. In the west France is also moving steadily forward; between Morocco and Algeria there is no strong natural boundary which would prevent the inroads of the robber tribes who inhabit the western fastnesses of the Atlas range, so an excuse has been found for pushing forward the Algerian frontier to the deep defile-like valley through which flows the Mulugia River. The new boundary, which is difficult to cross, affords sufficient protection, not only to the important military railway from Oran to Mescheria, but will also do so when the line is pushed on to the much coveted Tuat Oasis, from which commanding position France can wait with equanimity the inevitable break-up of the Shereefian Empire.

In the meantime, Italy having seen Tunis snatched from her by France, is throwing all the more longing glances upon Tripoli. For some years past she has been steadily strengthening her position as a Mediterranean Power, and in addition to now possessing a large and powerful fleet, she has added materially to the defence of her coasts by converting into naval stations and strongly fortifying Maddalena and Otranto.

But it is on the future absorption of Tripoli that the hopes of the

Italian Government and people are now mostly bent. Daily the number of Italian settlers increases there, and already the principal industries and commerce of the country lie almost entirely in their hands. Numerous agents have made friendly relations among the nomad Arab, Berberi, and Negro tribes, and are teaching them more and more to appreciate the value of commercial intercourse and the superiority of European wares. And Tripoli seems worth all this trouble. It is the key to the wide expanse of the Upper Soudan, and will open out roads for a brisk trade with the interior of the Dark Continent. Will, however, French jealousy permit an Italian occupation of Tripoli? Biserta and Goletta completely command the route between Italy and Tripoli. Shall we again see a decisive struggle for mastery between Rome and Carthage? As history shows, the most trifling incident often brings about an acute crisis. Italy views with much distrust the formidable works now being carried out at Biserta, which threaten to give France the power to thwart all her plans on Tripoli. In view of a possible attempt at a *coup de main* on Sicily, the Italian Government are fortifying, among other places, the conveniently situated harbour of Marsala, on the west coast of Sicily, which is only a day's run from Biserta.

Neither can England afford to despise the growing aspirations of France. Not only does Biserta threaten to cut the communication between Gibraltar and the East, but, when the Garonne Canal is completed, France will be in a position to rapidly, and without hindrance, reinforce her Mediterranean fleet. Malta, although occupying a strong position, may, under quite conceivable circumstances, be isolated. The Colonel comes to the conclusion that, as it does not seem likely that England will be able to establish another strong foothold as a set-off to Biserta and Algiers, she will only be able to hold her supremacy by, as in times past, maintaining a fleet of overwhelming strength in the Mediterranean.

He considers it unlikely that Spain, Austria, or Turkey will weigh for much in the coming struggle. The Austrian Fleet is only sufficiently strong to protect her own coasts. Spain, while coveting Morocco and asserting that to her belongs the reversion of that country, is certainly not in a position to enforce her claims, and unless a great change comes over the administration and spirit of the country, she will probably see the great prize snatched up, while she will be helpless to prevent it. Turkey, as far as her fleet is concerned, is, since the last war with Russia, practically *une quantité négligeable*.

"Whatever the solution of the Mediterranean question may be, it will, in any case, resolve itself into a trial of strength. The germs of the coming conflict extend along the North African coast, from the pillars of Hercules to the Nile Delta; and, when the outbreak comes, the prize of victory will, as in the past, so in the future, remain with the best prepared and the strongest."

Since the above was written, the Sultan of Morocco has yielded to the French demands, and ceded the Mulugia River as the frontier and also the Tuat Oasis.

The relations of England with the Triple Alliance form the subject of an article in the October number of the "Neue Militärische Blätter." The writer calls attention to the lively discussion which ensued, when the German Emperor visited England last year, on the question of the formal adhesion of Great Britain to the Alliance of the Three Powers. He points out that the question seems a simple one, because England's peculiar interests nowhere clash with those of the three States forming the Alliance, while the maintenance of European peace is a matter of the first importance to her. On the other hand, a struggle with Russia for supremacy in Asia and for the possession of India and one with France for supremacy in the Mediterranean seem almost unavoidable in the near future, while a collision in North-West Africa is also probable before long.

The Russo-French understanding, the incidents in Afghanistan and the Pamir territory, the presence of Russian emissaries in the Soudan, and the raising by Turkey again of the question of the evacuation of Egypt, with the growing influence of France and Russia at the Golden Horn, are drawing attention to the dangers ahead.

With the loss of India, England loses her position in the world; it can therefore be maintained that, on the one hand, she cannot dispense with the support of Germany and Austria, and that, on the other, she needs the assistance of the Italian Fleet; for the attitude of the two Great German Powers fetters to Russia's western frontier the largest portion of her forces, and in the event of a war with England would prevent her throwing large masses of troops on the seat of war in Asia. The junction of the Italian and English Fleets in the Mediterranean would secure a preponderance over the French Fleet, allowing for the co-operation with the latter under certain circumstances of the Russian Black Sea Squadron; but in order to maintain her communications with India and her Colonies, and at the same time to protect her interests in other parts of the world, it would seem necessary for England to still further strengthen her Fleet, and were she not secure of the support of Italy the increase in her ship-building rendered necessary would most appreciably swell her already heavy Naval Estimates.

On the other hand, also, it must be admitted that the Italian Fleet by itself is not equal to the French Mediterranean Squadron; Italy, therefore, on her side is thrown back upon the support of England for the protection not only of her extensive line of coast, which is accessible almost everywhere to the heaviest ships, but also for the safeguarding of the coast railways, which form the only means of communication by which her mobilization can be carried out.

Both countries, moreover, proceed more or less hand in hand in the northern and eastern portions of Africa, and the establishing of Italian rule in Erythrea, as also the extension of her sphere of sovereignty in the Somali territory, support the efforts of England in the Soudan as well as in the Lake region, besides tending to paralyse the influence of France which may be exercised through the possession of Obock.

So long as the influence of England predominated at the Golden Horn, that country ruled indirectly the north-eastern gate to the Mediterranean, as, through Gibraltar and Port Said, she held the western and southern ones. But there has lately been a turn in the wheel, and the Porte, yielding apparently to Russo-French influence, has again raised the question of the evacuation of Egypt; so England has let the keys of the Dardanelles slip from her hands, and in attempting to bring pressure to bear upon the Turkish Government, she may have to reckon under certain circumstances with the appearance of a Russian squadron from the Black Sea in the Mediterranean, and must therefore all the more take measures for securing the route to India.

France is the only country from which England can be threatened by invasion, but, so long as Germany and Italy do not at least observe a benevolent neutrality, and, above all, so long as France herself continues to inscribe on her banners the "*Revanche-Idée*," which chains her Army to the eastern frontier, so great an undertaking as a landing on the other side of the Channel may be considered as an impossibility, even if the English Channel and Reserve Squadrons should not prove equal to the task of completely assuring the protection of the whole coast.

The interests of Germany and Austria touch those of England in Colonial matters and in the Balkan countries. With regard to the first, no conflict is now likely to arise, and in the Balkan peninsula the interests of England and Austria are both opposed to those of Russia. The first must resist any strengthening of the Slav influence in those provinces and the latter the right of free passage through the Dardanelles.

There can be no question that a friendly understanding with the Powers forming the "*Triple Alliance*" is of immense advantage to England at all points where a conflict with France and Russia may be apprehended; a fact which is very evident to dispassionate, far-seeing, and cautious politicians on this side of the Channel. It must not be forgotten, however, when the possibility of a "*rapprochement*" to the "*Triple Alliance*" rouses so much discussion in the Press and Parliament, that, as history teaches us, the predominating idea of English politics is to avoid as far as possible all Continental complications and to draw as much advantage as possible from the weakening of other Powers.

If we now consider the question inversely, "*What advantage will accrue to the 'Triple Alliance' from an understanding with England?*" it restricts itself (for as regards Italy the question has already been answered) to what common action the German and English Fleets could undertake in the Baltic. The German Navy is sufficiently strong to defend the coast against the Russian Baltic Fleet; on the other hand, with the aid of a powerful English squadron, Germany might under certain circumstances be able to undertake the "*offensive*" against the Russian Baltic provinces, and an English squadron would also materially assist in defending the German coasts against a French Fleet. How far an English Fleet would be able to

take part in operations on the southern theatre of war would depend entirely upon the attitude of the Porte. But the question is, Would England be in a position to afford this support? And this seems to us more than doubtful.

The next great war will tax England's resources in Asia and Africa, perhaps even in America, in any case in the seas in all quarters of the globe, so completely that in the opinion of English authorities the greatest sea Power in the world will not in its present condition be able to afford support to the Alliance and at the same time perform its duties in all parts of the world, such as maintaining the communications with India and her Colonies, securing the trade routes, and defending her own coasts.

The advantages, therefore, to be gained from an alliance with England are of a very doubtful nature; the more so when the uncertainty of the continuity of English foreign policy is taken into account. From a settled alliance with England the Triple Alliance would undertake far-reaching responsibilities without receiving any satisfactory guarantees in return.

Nevertheless, a general conflagration in the future, brought about by the opposition of England to France and Russia, and the "Revanche-Policy" of the former, will, in self-defence, drive the "sea-ruling Albion" to the side of the Triple Alliance, for the defeat of the Central Powers would also entail in all probability the loss of her over-sea possessions to France and Russia.

As it is quite possible that England will some day find herself involved in hostilities with France and Russia, I have thought it as well to show, in connection with the position in the Mediterranean, what naval force Russia will have at her disposal in the Black Sea by the end of next year, and which, by an agreement with Turkey as to passage through the Dardanelles, could reinforce the French Mediterranean Fleet. Last year some alterations were made in the organization of the Russian Fleet, into the details of which, however, it is not here necessary to enter. The Black Sea Division now consists of:

Battle-ships.—"Catherine II," "Tehesmé," "Sinope," "George the Victorious," "The Twelve Apostles," and the two "Popoffkas" "Novgorod" and "Admiral Popoff."

Cruiser.—"Pamyat Merkurya."

Torpedo Cruiser.—"Kapitan Sacken," "Kasarski."

Gun-vessels.—"Kuban'ez," "Zaporoschez," "Donjez," "Tepez," "Uraljez," and "Tschernomojez."

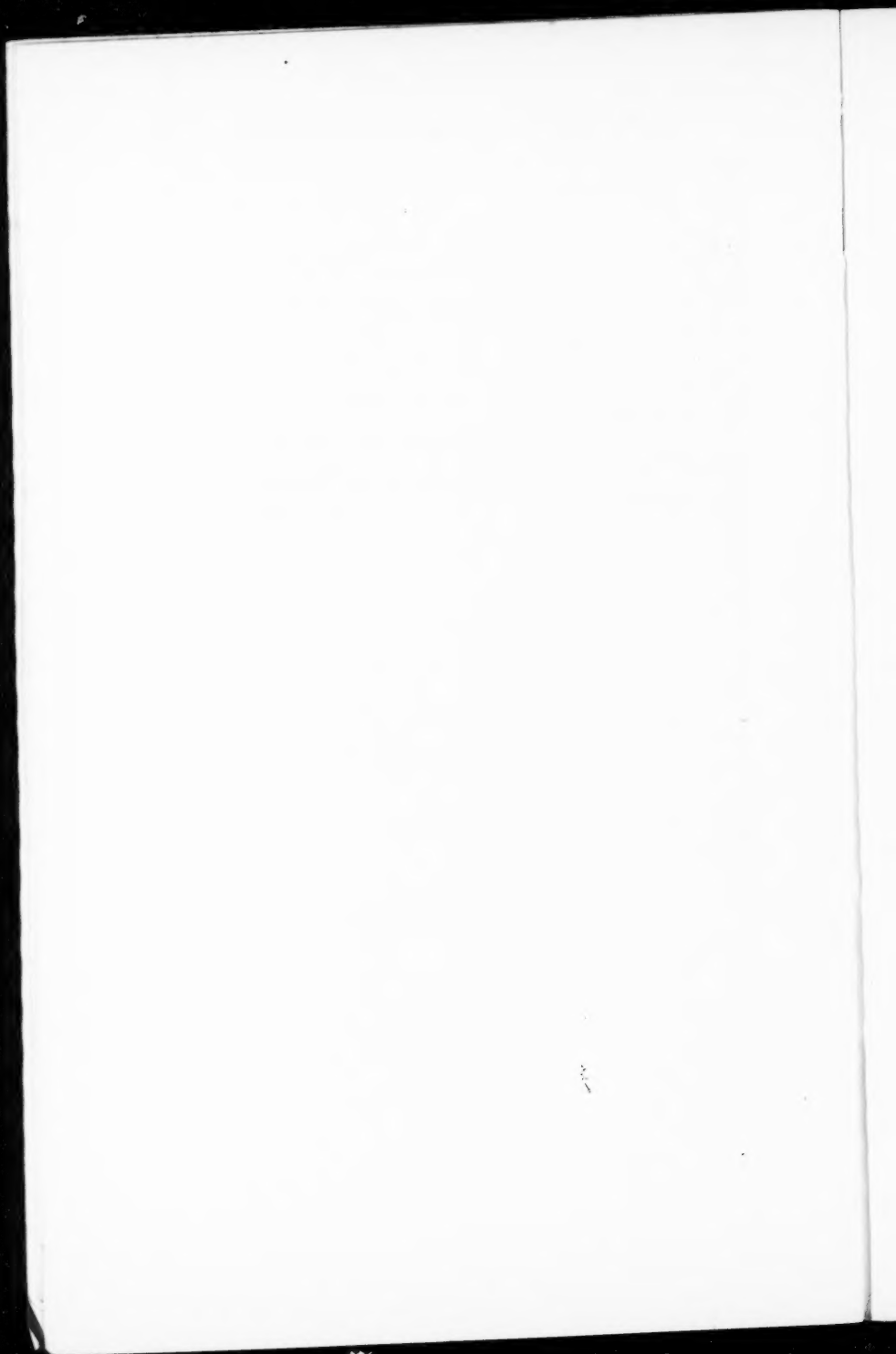
Torpilleurs de Haute Mer.—Sixteen.

Torpedo-boats, 2nd Class.—Seven; and several troop-ships and steamers for various purposes.

Of the above, all the battle-ships, with the exception of the two "Popoffkas," which are useless for everything except coast defence, are new and may be counted as of the 1st Class. The three first on the list are ready for sea; they are protected by a 16-inch steel belt, round the water line, with a central pear-shaped redoubt plated with 14-inch armour, in which they carry six 12-inch 56-ton B.L. guns mounted in pairs on disappearing carriages, two pairs forward at

each corner of the redoubt, and the remaining pair in the after part of the redoubt amidships. Their auxiliary armament consists of seven 6-inch guns and 16 quick-firing ditto, with six torpedo discharges. They are 10,180 tons displacement, engines of 11,000 I.H.P., with a speed of 16 knots. The "George the Victorious" and "Twelve Apostles" will not be completed until end of next year, but they are of the same type, with the same armour and armament. The cruiser is of an old type, and is only credited with a speed of 14 knots. She is built of iron and steel, and has an armament of four 18-ton B.L. guns and four 4-inch ditto. The six gun-vessels are all new; are 1,224 tons displacement, engines of 1,500 H.P., and a nominal speed of 20 knots; they are armed with two 8-inch, one 6-inch, and six quick-firing guns.

It will thus be seen that the Russian Black Sea Squadron, if it comes down through the Dardanelles, is a force which cannot be ignored in estimating the naval position in the Mediterranean. Two more battle-ships of a similar type have also lately been laid down.—H. G.



THE MAGAZINE RIFLE QUESTION.

Translated from the "*Jahrbücher für die Deutsche Armee und Marine*," June and September, 1892, by Captain F. L. NATHAN, Royal Artillery.

June, 1892.

WITH regard to the rifle calibre question and the points connected with it, a new stage has been reached through the action of Italy, of which mention has already been made (see "*Survey*," in vols. lxxx, lxxxi, and lxxxii). Calibres of from 10 mm. (0.3937 in.) to 11 mm. (0.4331 in.), inaugurated at the beginning of the decade 1860-70 by the Swiss ballisticians, and which received general recognition in 1866 with the universal acceptance of the quick-firing breech-loader, were followed, from 1886 onwards, by calibres of from 7.5 mm. (0.2952 in.) to 8 mm. (0.3149 in.), brought forward afresh by the Swiss, but first actually adopted in France.

Even in 1891 Russia still adhered to the first limits, on account of the difficulties connected with the production of her 3-line rifle (0.3 in.), inclining, however, rather to the lower than to the higher limit, whilst, at the same time, Italy, one of the Powers of the Triple Alliance, after she had satisfied the first requirements of a repeating rifle with smokeless powder, by means of a twofold process of transformation, took the daring plunge of adopting a new calibre of 6.5 mm. (0.2569 in.), thus saving herself a new equipment of the calibre previously in use, which would otherwise have been necessary.

Romania quickly followed her example.

The Netherlands, which has till now imitated Italy, intends to do the same.

Spain, Greece, and Turkey, being Powers in unfortunate financial circumstances, still adhere to the second scale of calibres, after Turkey has lavished large sums on the unsatisfactory intermediate calibre of 9.5 mm. (0.374 in.), and now possesses three calibres at one and the same time.

In Spain the "*Junta mixta de Armas Portátiles*" has decided on the Mauser rifle (Pattern 1890) of 7.65 mm. (0.3012 in.), similar to that adopted by Turkey, with some slight alterations; it bears a close resemblance to the Belgian rifle, Pattern 1889.

Greece has decided in favour of the Austro-Hungarian rifle, Pattern 1888.

Servia is said to have decided on an intermediate calibre of 7.2 mm. (0.2834 in.).

Portugal had rather prematurely adopted a repeating rifle (Pattern 1886, Kropatschek system), and, considering her present financial situation, could scarcely decide on a new equipment.

Sweden is converting her large-calibre Remingtons into 8 mm. single loaders, and will very likely remain satisfied with them.

Going out of Europe, Japan contemplates an 8 mm. (0.3149 in.) rifle on the Murata system; Argentina has ordered 50,000 Belgian Mausers; and Chili has procured Austrian Mannlicher rifles (see "Umschau," vol. lxii).

In the United States of America, a special Committee has been sitting since the end of 1890, to study patterns of small-calibre repeating rifles, which have been sent to them in response to a general invitation to do so.

According to the "Mitteilungen über Gegenstände des Artillerie und Genie Wesens," October, 1891, only service rifles of foreign Powers, viz., of Germany, Austria-Hungary, England, and Belgium had been tried up to that time. The Minister of War requires a calibre of 7.62 mm. (0.3 in.), a copper-coated bullet, weighing with hard lead core, 14.9 gm. (217.4 gr.), and 2.33 gm. (31.37 gr.) of smokeless powder made by the Belgian factory at Wetteren, the prototype of the new home-made powder, which produced approximately a velocity of 610 m. (2,000 ft.-sec.). According to direct information, the Mauser rifle has given the most satisfaction. The authorities have decided that the experiments are to be concluded by the end of June of the current year.¹

To turn to literature; General Richard Wille, in his article which appeared in the summer of 1890, entitled "Wolfram Bullets" (published by R. Eisenschmidt, Berlin), advocated the diminution of the rifle calibre to 6 mm. (0.2362 in.); up to the present, however, he has not been justified by results in respect to the inadmissibility of coated hard-lead bullets, and the necessity of wolfram metal for such calibres.

Before Wille, the assertion made by Professor Fred. Wm. Hebler, of Zurich, in his work entitled "The Smallest Calibre, or the Future Infantry Rifle" (Zurich, 1886), viz., that a lower calibre limit should be fixed, met with universal favour. Taking the manufacture and cleaning of the bore into account, he fixed it at 7.5 mm. (0.2953 in.).

In the "Schweizer Zeitschrift für Artillerie und Genie," March, 1892, No. 3, Professor Hebler, in his treatise entitled "Shall we stop at a calibre of 7.5 mm. (0.2953 in.) or diminish it still further, and if so how far?" (first published in the Austrian "Schützenzeitung"), gives his opinion on the action of Italy in the matter, and assumes that technical difficulties no longer bar the way to the introduction of a still smaller calibre. He now investigates the best lower limit, and advises a reduction to a calibre of 5 mm. (0.1968 in.).

On the strength of his own experiments, he considers the 5 mm. (0.1968 in.) cartridge the best and most suitable for adoption, because the technical expedients of the present day allow barrels of 5 mm. (0.1968 in.) calibre to be produced without overwhelming difficulty, and because the smaller the calibre the more favourable are the

¹ Note by Translator.—The Committee has recently submitted its decision in favour of the Krag-Jørgensen No. 5, which is a considerable modification of the original Danish Krag-Jørgensen rifle.

results obtained, with regard to flatness of trajectory, power of penetration, recoil, the humane nature of the wounds, &c., whilst at the same time a man can carry a greater number of cartridges.

Hebler recognizes only one valid objection to the 5 mm. (0.1968 in.) calibre, "That the maximum pressure is too high, so high that the locking lugs of the bolt will set up." Hebler reckons the pressure in the 5 mm. (0.1968 in.) rifle at 4,500 atmospheres (29.5 tons to the sq. in.), but thinks that the safety of the bolt is sufficiently insured by an invention of the Vienna gun manufacturer, Karl Krnka, for the bolt cylinder (4 lugs instead of 2, in the shape of a cross). Assuming the "value" of an 11 mm. (0.4331 in.) rifle with black powder to vary from 90 to 100, and of the 7.5 mm. (0.2953 in.) rifle with smokeless powder from 500 to 600; Hebler estimates the "value" of a 6 mm. (0.2362 in.) rifle at from 900 to 1,000 and of a 5 mm. (0.1968 in.) at from 1,300 to 1,400; justification for this estimate is, however, wanting. According to Hebler, with a weight of ammunition of about 4 kilo. (8.818 lbs.), the number of cartridges which the soldier can carry with him is about 140 with the 8 mm. (0.3149 in.), 160 with the 7.5 mm. (0.2952 in.), 220 with the 6 mm. (0.2362 in.), 250 with the 5.5 mm. (0.2165 in.), and 280 with the 5 mm. (0.1968 in.). He can see no difficulties in the manufacture of cartridges and envelope bullets of such calibre.

The following table gives some of the principal characteristics of the three groups of calibres above mentioned:—

THE MAGAZINE RIFLE QUESTION.

Calibre.	Bullet.	Charge.	Load on the cross section.	Value of $\frac{d^2}{W}$	Velocity.	Weight of cartridge.	Pressure.
11.0 mm. (0.4331 in.)	25.0 gm. (385.8 gr.)	5.0 gm. (77.16 gr.) (black powder)	gm. on the sq. mm. 0.25	3.4	450 m. (1,476 f.s.)	42.0 gm. (618.0 gr.)	1,500 atm. (9.85 tons per sq. in.)
8.75 mm. (0.3444 in.)	14.0 gm. (216.05 gr.)	2.0 gm. (30.8 gr.) (smokeless powder)	0.20—0.30	3.84	600 m. (1,968 f.s.)	29.0 gm. (447.5 gr.)	2,500— 3,000 atm. (16.4—19.8 tons per sq. in.)
6.5 mm. (0.2569 in.)	10.5 gm. (162.04 gr.)	.. ..	0.31	2.85	700 m. (2,297 f.s.)	21.5 gm. (331.8 gr.)	5,000 atm. (32.8 tons per sq. in.)

No.	Country.	Year.	Maker.	Calibre.	Length.		Weight.			
					Without bayonet.	With bayonet.	Empty.		Filled.	
							Without bayonet.	With bayonet.	Without bayonet.	With bayonet.
1	France	1886	Lebel	8 mm. (0·3149 in.)	1·307 m. (4·26 ft.)	1·825 m. (5·98 ft.)	4·18 kilo. (9·21 lb.)	4·58 kilo. (10·09 lb.)	4·415 kilo. (9·73 lb.)	..
2	Austria-Hungary..	1888-90	Mannlicher	8 mm. (0·3149 in.)	1·281 m. (4·2 ft.)	1·526 m. (5·00 ft.)	4·4 kilo. (9·7 lb.)	4·77 kilo. (10·51 lb.)	..	..
3	Germany	1888	Mannlicher	7·9 mm. (0·311 in.)	1·245 m. (4·08 ft.)	..	3·8 kilo. (8·37 lb.)	..	..	..
4	England	1889	Lee	7·7 mm. (0·303 in.)	1·266 m. (4·16 ft.)	1·569 m. (5·14 ft.)	4·252 kilo. (9·37 lb.) (With magazine)	4·677 kilo. (10·3 lb.)	..	..
5	Russia	1891 Three line rifle	Kapit Mosin.....	7·62 mm. (0·3 in.)	..	1·73 m. (5·67 ft.)	..	4·3 kilo. (9·48 lb.)	..	..
6	Italy	1891	Mannlicher	6·5 mm. (0·2569 in.)	..	..	3·72 kilo. (8·2 lb.)	..	..	..
7	Belgium	1889	Mauser in Obern- dorf	7·65 mm. (0·3012 in.)	1·275 m. (4·18 ft.)	1·525 m. (5·0 ft.)	3·9 kilo. (8·6 lb.)	4·27 kilo. (9·41 lb.)	4·043 kilo. (8·91 lb.)	..
8	Switzerland	1889	Schmidt Rubin ...	7·5 mm. (0·2952 in.)	1·302 m. (4·27 ft.)	1·6 m. (5·25 ft.)	4·3 kilo. (9·48 lb.)	..	..	..
9	Denmark	1889	Krag Jørgensen ..	8·0 mm. (0·3149 in.)	1·33 m. (4·36 ft.)	1·59 m. (5·21 ft.)	4·250 kilo. (9·37 lb.)	4·470 kilo. (9·85 lb.)	..	..
10	Turkey (Spain) ...	1890	Mauser in Obern- dorf	7·65 mm. (0·3012 in.)	1·235 m. (4·05 ft.)	..	4·032 kilo. (8·89 lb.)	..	..	..

Filled.		Barrel.	Sighting.	Grooves.		Bolt motion.	Magazine.	Method of loading.			
Weight.	With bayonet.			No.	Twist.				Material of case.	Length.	Weight.
4.815 kilo. (10.61 lb.)		Uncased	250—2,000 m. (273—2,187 yds.)	4	24 cm. (9.45 in.)	Double	In stock	8 cartridges, including 1 in barrel	Brass.	75 mm. (2.95 in.)	29 g. (447)
..		"	500—2,500 paces	4	25 cm. (9.84 in.)	Straight pull	Box	Clip with 5 cartridges	"	76 mm. (2.99 in.)	29.7 (461)
..		Cased	250—2,050 m. (273—2,241 yds.)	4	24 cm. (9.45 in.)	Double	"	"	"	82.5 mm. (3.24 in.)	27.3 (421)
..		Uncased	200—1,800 yds. 1,600—2,900 yds.	7	33 calibre (10 in.)	"	Detachable box	8 cartridges in magazine, also single loading	"	77 mm. (3.03 in.)	28.3 (436)
..		"	..	4	30 calibre (10 in.)	"	Box	Charger for 5 cartridges	"	76 mm. (2.99 in.)	23.46 (362)
..		"	24 cm. = 36 calibre (9.45 in.)	"	"	Clip with 5 cartridges	"	..	21.5 (331)
4.313 kilo. (9.52 lb.)		Cased	500—2,000 m. (547—2,187 yds.)	4	25 cm. = 33 calibre (9.84 in.)	"	"	Charger for 5 cartridges, also single loading	"	78 mm. (3.07 in.)	28.6 (441)
..		Uncased	300—2,000 m. (328—2,187 yds.)	3	27 cm. (10.63 in.)	Straight pull with revolving bolt cylinder	"	Charger for 12 cartridges, also single loading	"	77.5 mm. (3.05 in.)	27—27 (416—424)
..		Cased	250—1,400 m. (273—1,531 yds.)	6	30 cm. (11.8 in.)	Double	Box with door opening at side	Charger for 5 cartridges, also single loading	"	76 mm. (2.99 in.)	30 g. (462)
..		Uncased	500—2,050 m. (547—2,241 yds.)	4	25 cm. = 33 calibre (9.84 in.)	"	Box	Charger for 5 cartridges, also single loading	"	78 mm. (3.07 in.)	28.6 (441)

Grooves.		Bolt motion.	Magazine.	Method of loading.	Cartridge.				
Twist.	Material of case.				Length.	Weight.	Bullet.		
							Material (case and envelope).	Length.	
24 cm. (9·45 in.)	Double	In stock	8 cartridges, including 1 in barrel	Brass.	75 mm. (2·95 in.)	29 gm. (447·5 gr.)	Hard lead. White metal.	31 mm. (1·22 in.)	
25 cm. (9·84 in.)	Straight pull	Box	Clip with 5 cartridges	"	76 mm. (2·99 in.)	29·7 gm. (461·4 gr.)	Hard lead. Steel.	31·8 mm. (1·25 in.)	
24 cm. (9·45 in.)	Double	"	"	"	82·5 mm. (3·24 in.)	27·3 gm. (421·3 gr.)	Hard lead. Cupro-nickel.	32 mm. (1·26 in.)	
33 calibre (10 in.)	"	Detachable box	8 cartridges in magazine, also single loading	"	77 mm. (3·03 in.)	28·3 gm. (436·7 gr.)	"	"	
30 calibre (10 in.)	"	Box	Charger for 5 cartridges	"	76 mm. (2·99 in.)	23·46 gm. (362·0 gr.)	Hard lead. White metal.	30·5 mm. (1·20 in.)	
24 cm. = 36 calibre (9·45 in.)	"	"	Clip with 5 cartridges	"	"	21·5 gm. (331·8 gr.)	Lead. White metal.	30·5 mm. (1·2 in.)	
25 cm. = 33 calibre (9·84 in.)	"	"	Charger for 5 cartridges, also single loading	"	78 mm. (3·07 in.)	28·6 gm. (441·3 gr.)	Soft lead. Cupro-nickel.	30·5 mm. (1·2 in.)	
27 cm. (10·63 in.)	Straight pull with revolving bolt cylinder	"	Charger for 12 cartridges, also single loading	"	77·5 mm. (3·05 in.)	27—27·5 gm. (416·6—424·4 gr.)	Hard lead, with steel point and paper jacket.	28·7 mm. (1·13 in.)	
30 cm. (11·8 in.)	Double	Box with door opening at side	Charger for 5 cartridges, also single loading	"	76 mm. (2·99 in.)	30 gm. (462·9 gr.)	Soft lead. Cupro-nickel.	30 mm. (1·18 in.)	
25 cm. = 33 calibre (9·84 in.)	"	Box	Charger for 5 cartridges, also single loading	"	78 mm. (3·07 in.)	28·6 gm. (441·3 gr.)	Hard lead. White metal.	30·7 mm. (1·21 in.)	

Bullet.		Charge.		Muzzle velocity.	Pressure.	Load on the cross section (or value of $\frac{d^2}{W}$).	Recoil.
Length.	Weight.	Nature of powder.	Weight.				
31 mm. (1.22 in.)	15 gm. (231.5 gr.)	Smokeless flake powder	2.8 gm. (43.2 gr.)	632 m. (2,073 ft.)	..	0.298 gm. sq. mm. (3.0)	0.94 m.-kilo. (0.1925 lb. per sq. ft.)
31.8 mm. (1.25 in.)	15.8 gm. (243.8 gr.)	Smokeless gun-cotton powder	2.75 gm. (42.43 gr.)	620 (520) m. (2,034 (1,706 ft.)	..	0.316 gm. sq. mm. (2.84)	1.11 m.-kilo. (0.2273 lb. per sq. ft.)
32 mm. (1.26 in.)	14.5— 14.7 gm. (223.7— 226.9 gr.)	..	2.75 gm. (42.43 gr.)	620 m. (2,034 ft.)	3,200 atm. (21 tons)	0.293 gm. sq. mm. (3.0)	1.08 m.-kilo. (0.2064 lb. per sq. ft.)
..	215 gr.	Pellet black powder. Cordite smokeless	4.5 gm. (70.0 gr.) 2.0 gm. (30.5 gr.)	564 m. (1,850 ft.) 686 m. (2,000 ft.)	2,835 atm. (18.0 tons, 15.0 tons)	(3.0)	—
30.5 mm. (1.20 in.)	13.86 gm. (214 gr.)	Smokeless (home-made)	..	610—620 m. (2,001— 2,034 ft.)	..	0.304 gm. sq. mm. (2.9)	—
30.5 mm. (1.2 in.)	10.5 gm. (162 gr.)	Smokeless Noble Ballistite	..	700 m. (2,296.6 ft.)	5,000 atm. (32.8 tons)	0.31 gm. sq. mm. (2.85)	—
30.5 mm. (1.2 in.)	14.2 gm. (219.1 gr.)	Smokeless (HP) N	3.05 gm. (47.0 gr.)	610 m. (2,001 ft.)	3,000 atm. (19.7 tons)	0.309 gm. sq. mm. (2.9)	1.1 m.-kilo. (0.2253 lb. per sq. ft.)
30.7 mm. (1.3 in.)	13.7 gm. (211.5 gr.)	Smokeless P/C 89	1.75—2 gm. (27—30.1 gr.)	600 m. (1,968 ft.)	2,600 atm. (17.1 tons)	0.31 gm. sq. mm. (2.89)	0.86 m.-kilo. (0.1761 lbs. per sq. ft.)
30 mm. (1.18 in.)	15.43 gm. (238.1 gr.)	Smokeless (home-made)	2.2 gm. (33.9 gr.)	600 m. (1,968 ft.)	2,300 atm. (15.1 tons)	0.037 gm. sq. mm. (2.91)	—
30.7 mm. (1.21 in.)	14 gm. (216.0 gr.)	Smokeless (No. 6 P.)	2.4 gm. (37.0 gr.)	652 m. (2,139 ft.)	3,000 atm. (19.7 tons)	0.305 gm. sq. mm. (2.94)	—

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In many details of construction modern military rifles present features of similarity; thus the bolt action is found throughout, and it has generally a forward and turning motion, and is provided with two locking lugs. The straight-pull bolt has met with less favour.

After 1886 the tube magazine was quite abandoned; the box magazine and clip loading have been almost universally adopted. England has, with but small success (see "Umschau," vol. lxxxii), retained the first construction of Lee.

The anomalous construction of Denmark is said not to give much satisfaction,¹ and a change to the Mauser rifle is under consideration. Cartridge holders which disengage or free the cartridges in loading, and do not enter the magazine, are the best (Belgian Mauser rifle). Barrel casings have only found partial favour; a wooden hand-guard is generally considered sufficient. The bullet cores are mostly of hard lead, the envelope of white metal, nickel steel, or copper nickel.

The powder throughout is smokeless. It is in the shape of flake powder, paper powder, guncotton powder, dice shaped (or cubical) nitro-glycerine powder, &c.

The accompanying table gives a survey of rifle statistics for the greater, and for some of the medium and smaller, European Powers, so far as data were obtainable.

September, 1892.

The period under review does not certainly present such rich materials for treatment as that recently under examination (June, 1892, vol. lxxxiii, p. 338); it has been, nevertheless, an important one, and has thrown much light on certain questions of extreme moment, especially with regard to the further diminution in the calibre of small arms.

* * * * *

With reference to the small-arm question, we announced that Italy had finally adopted the calibre of 6.5 mm. (0.2569 in.), that Roumania had practically decided upon the same calibre, and that the Netherlands had it in contemplation.

Italy produces all her small-arms in her own factories, although apparently negotiations are on foot with the Austrian Small Arms Company, at Steyr, with regard to taking over a portion. The direct communications which have reached us from Italy as to the value of the new weapon sound extremely satisfactory.

In Roumania, Parliament has voted a sum of 15 million francs to cover the introduction of the Mannlicher rifle of 6.5 mm. (0.2569 in.) calibre, in favour of which the Commission which carried out the trial of various systems of small-calibre magazine-guns pronounced unanimously and finally. It is however quite clear, that a suitable smokeless powder for the rifle has not yet been decided upon, and that it is still under investigation. The different sorts of powder from France, Belgium, and Germany have been tried, and only two

¹ *Note by Translator.*—This is at variance with the recent report of the U.S. Board.

proved in any degree satisfactory; with these two experiments are to be continued on a larger scale, for which purpose 5,000 rifles have been ordered from the Steyr factory. These rifles are to be tried by the troops with the two smokeless powders, under active service conditions. Pending the results of these trials, the question of the rifle, as well as that of the powder, remains an open one (see remarks of the Minister of War, General Lahovary, in the Senate, as reported in the "Cologne Gazette" of June 23rd).

In the Netherlands, the Commission for experiments has completed its work, and has likewise pronounced in favour of the 6.5 mm. (0.2569 in.) Mannlicher rifle. More exhaustive experiments are to take place shortly, as soon as the purchase of the necessary number of rifles has been effected.

In Spain, the Mauser rifle of 7.65 mm. (0.3012 in.) calibre was finally accepted in July. Searching experiments in the camp of Carabanchel gave most favourable results. The ballistic results proved most astonishing, although the troops had only handled the rifle for a short time; the enthusiasm of the soldiers for it is said to be extraordinary. Field firing was carried out at a range of 2,000 m. (2,187 yds.). Russia has given a commission for the alteration of 400,000 Berdan rifles into magazine arms, to the National Small Arms Factory established in 1889 at Horstall, near Lüttich, which has already a Belgian order in hand for 150,000 rifles. The order is to be executed within two years. The alteration is to cost 15,000,000 francs. Further information about the Company formed by the Lüttich small arm manufacturers is given in the "Revue de l'Armée Belge," vol. vi, May, 1892. Turkey intends to convert her 550,000 Martini-Henry rifles of 11.3 mm. (0.4449 in.) calibre into rifles of 7.65 mm. (0.3012 in.) calibre. According to advices from Russia, tenders have been made for the work by the German firm of Mauser, by some English factories, and by a French firm; negotiations are in progress. The bore of their rifles, at present very variable, is to be brought to an uniform calibre of 7.65 mm. (0.3012 in.), which is that of the Mauser rifle, Pattern 1890.

With regard to the calibre of 6.5 mm. (0.2569 in.), we have only been able so far to give incomplete notices (see tables, vol. lxxxiii, pages 356—357).

In the May number of the "Mitteilungen über Gegenstände des Artillerie und Genie Wesens" (Vienna), however, a more complete description has been published of a repeating rifle of 6.5 mm. (0.2569 in.), constructed by Chief Engineer Mannlicher.

In the July number of the "Revue d'Artillerie" there is an article on the same subject, in which use has been made of the official publications concerning the experiments of the Technical and Administration Committee at Vienna, carried out with that rifle, and also of a description of the arm furnished by the Steyr factory. We shall follow the latter source, which also contains numerous illustrations. The constructional details of the rifle are very similar to those of the German rifle, Pattern 1888, of 7.9 mm. (0.311 in.) calibre; the Mannlicher rifle, however, has no barrel casing, but has a wooden

hand-guard instead. The four grooves have a length of twist of 20 cm. (7·87 in.) corresponding to 31 calibres. We shall pass over slight alterations in the bolt, cartridge feeding, stock, and sighting. The latter goes up to 2,500 m. (2,734 yds.), equal to an angle of departure of $9^{\circ} 16'$, with a corresponding angle of descent of $16^{\circ} 50' 5''$, and time of flight of $11'' 21$. The cartridge (with rim) contains a charge of 2·35 gm. (36·26 gr.) of flake (Blättchen) powder, made by the Rhenish Westphalian Explosives Co., at Troisdorf, near Bonn; the steel or nickel enveloped bullet weighs 10·5 gm. (162 gr.), is 31·4 mm. (1·236 m.) long, with a greatest external diameter of 6·7 mm. (0·2637 in.). The cartridge is 77·7 mm. (3·058 in.) long, and weighs 22·7 gm. (350·34 gr.). The cartridge clip for five cartridges weighs about 9·5 gm. (146·6 gr.).

The Vienna Committee experimented with two rifles of different lengths and corresponding weights, using the same ammunition, which differs but slightly from that described above [cartridge 76·5 mm. (3·22 in.) long, weighing 21·9 gm. (337·96 gr.)]. The barrels of the rifles differed by 60 mm. (2·36 in.), the longer rifle with barrel being 1·285 m. (4·21 ft.), the shorter with barrel being 1·225 m. (4·02 ft.); the weights were 3·935 kilos. (8·67 lbs.), 3·845 kilos. (8·76 lbs.) respectively. The experiments dealt with:—(1) muzzle velocity, (2) ordinates of the 450 m. (492 yds.) trajectory, (3) penetration of the bullet, (4) angle of jump, (5) height of sight, (6) cone of dispersion.

For the short rifle charges of 2·1 gm. (32·4 gr.) of Ballistite and 2·6 gm. (40·1 gr.) of Austrian rifle powder, Pattern 1890, were used to obtain the velocity, at one time weighed, at the other measured. For the long rifle only weighed charges of the Austrian powder were used. The weighed charges gave the more regular results, the Austrian powder varying less than the Ballistite. The velocities of the long and short rifles differed inappreciably. For an observed velocity at 25 m. (27·3 yds.) of 705 m. (2,313 ft.-sec.), the muzzle velocity was estimated to be 730 m. (2,395 ft.-sec.). The highest ordinate of the 450 m. (492 yds.) trajectory was 81·5 cm. (2·67 ft.) at 262·5 m. (287 yds.). The steel envelope bullet penetrated close to the muzzle 69 cm. (27·16 in.) red beech wood, as compared with a penetration of 50 cm. (19·68 in.) to 56 cm. (22·04 in.) with the 8 mm. (0·3149 in.) rifle. 15 cm. (5·9 in.) of fir were penetrated at 1,500 m. (1,640 yds.); the penetration at 2,500 m. (2,734 yds.) still amounted to 11 cm. (4·3 in.); the angle of jump was +13 minutes in the long, and +14·5 minutes in the short rifle.

The following tables, which are included in the article above mentioned, give some interesting ballistic data:—

Range in metres and yards.	Angle of departure.			Angle of descent.			Time of flight in seconds.	Remaining velocity in metres and f.s.	Dangerous space for an object 1 m. (3.28 ft.) in height fired at from a rest at the height above the ground of		Probable double deviation in metres and feet.	
	°	'	"	°	'	"			1.5 m. (4.9 ft.)	0 m. (0 ft.)	Vertical.	Horizontal.
100 m. (109.3 yd.)	0	4	0	0	4	50	0.14	650 m. (2132.58 f.s.)	135 m. 442.9 ft.	..	0.03 m. (0.098 ft.)	0.02 m. (0.066 ft.)
500 m. (546.8 yd.)	0	25	10	0	34	40	0.90	445 m. (1,460 f.s.)	80 m. 262.4 ft.	..	0.21 m. (0.689 ft.)	0.13 m. (0.423 ft.)
1,000 m. (1,093.6 yd.)	1	11	30	1	51	20	2.36	330 m. (1,082.7 f.s.)	..	31 m. (101.7 ft.)	0.66 m. (2.16 ft.)	0.52 m. (1.7 ft.)
1,500 m. (1,640.4 yd.)	2	46	40	4	44	40	4.56	282 m. (925.2 f.s.)	..	12 m. (39.37 ft.)	1.40 m. (4.59 ft.)	1.34 m. (4.39 ft.)
2,000 m. (2,187.2 yd.)	5	23	20	9	39	20	7.51	202 m. (666.7 f.s.)	..	5.5 m. (18.04 ft.)	4.20 m. (13.78 ft.)	3.40 m. (11.15 ft.)
2,500 m. (2,734 yd.)	9	16	0	16	50	30	11.21	174 m. (570.88 f.s.)	..	3 m. (9.84 ft.)	16.00 m. (52.49 ft.)	8.00 m. (26.24 ft.)

Range in metres and yards.	Ordinates in metres and yards at half the range.		Co-ordinates of the "culminating point" of the trajectory in metres and yards.		
	6.5 mm. (0.2569 in.) rifle.	German rifle Pattern '88. (0.311 in.)	Sighting for a range of metres and yards.	Abscissæ.	Ordinates.
500 m. (546.8 yds.)	1.04 m. (1.138 yds.)	1.50 m. (1.64 yds.)	1,200 m. (1,312 yds.)	710 m. (776.4 yds.)	12.70 m. (13.88 yds.)
600 m. (656.1 yds.)	1.65 m. (1.80 yds.)	2.50 m. (2.73 yds.)	1,400 m. (1,531 yds.)	820 m. (897.7 yds.)	21.88 m. (23.92 yds.)
800 m. (874.9 yds.)	3.53 m. (3.86 yds.)	5.40 m. (5.90 yds.)	1,600 m. (1,750 yds.)	940 m. (1,028 yds.)	35.37 m. (38.67 yds.)
1,000 m. (1,093.6 yds.)	6.74 m. (7.37 yds.)	10.01 m. (10.94 yds.)	1,800 m. (1,968 yds.)	1,070 m. (1,176 yds.)	53.56 m. (58.57 yds.)
			2,000 m. (2,187.2 yds.)	1,210 m. (1,323 yds.)	77.20 m. (84.40 yds.)
			2,500 m. (2,734 yds.)	1,500 m. (1,640 yds.)	165.90 m. (181.43 yds.)

On comparing it with the German rifle, Pattern 1888, to which an equally great rapidity of fire is ascribed, the author points out, how in the 6.5 mm. (0.2569 in.) rifle the filled clip only weighs 120 gm. (1,852 gr.), and is therefore 25 gm. (385.8 gr.) lighter than that of the rifle Pattern 1888, so that it allows of an increase in one-quarter of the amount of ammunition which can be carried without an increase of weight.

The flatness of the trajectory, with 730 m. (2,395 ft.-sec.) velocity as against 630 m. (2,066.9 ft.-sec.), is appreciably increased, as the following table shows:—

Height of firing rest in metres and feet.	Height of target in metres and feet.	Maximum dangerous space in metres and yards.
1.5 m. (standing) (4.921 ft.) "	1.8 m. (infantry standing) (5.9 ft.) " 2.7 m. (cavalry) (8.85 ft.) "	500.0 m. (546.8 yds.) 645.0 m. (704.4 yds.)
0.4 m. (lying down) (1.312 ft.) "	1.8 m. (infantry standing) (5.9 ft.) " 2.7 m. (cavalry) (8.85 ft.) "	600.0 m. (656.2 yds.) 720.0 m. (787.4 yds.)

In the small-calibre rifle accuracy is appreciably greater, and, without laying much stress upon it, the recoil is slighter. It has been calculated that its power of penetration, even at a range of 2,000 m. (2,187·2 yd.), is superior to that of the Lebel rifle.

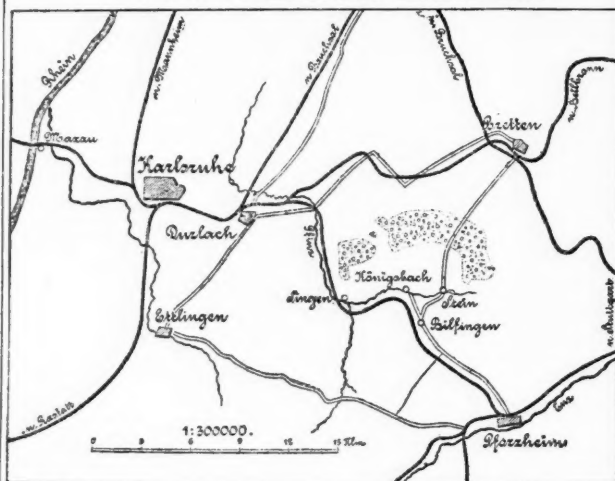
In conclusion, the author mentions the further diminution of the calibre to 5 mm. (0·197 in.) on the strength of Hebler's remarks (see vol. lxxxiii, p. 354).

Meanwhile, certain interesting experiments made in France with a new repeating rifle of 6·5 mm. (0·2569 in.) have been concluded. The "France Militaire" of 31st May has a notice of it. Its small weight, its simplicity, the solidity of its mechanism, the very considerable velocity, and the lightness of the ammunition—weight of cartridge 20 gm. (308·6 gr.) as compared with the 29 gm. (447·5 gr.) Lebel cartridge—are mentioned as so many advantages. Seeing that the French Lebel rifle must be considered inferior to those of all foreign Powers, owing to its method of loading, we may assume that the authorities are more and more inclining to the idea of a new armament in spite of the excellent ballistic qualities of the present one. The decision will be hastened by Italy's adoption of the smaller calibre which, on its completion, will prove essentially superior to the French rifle even in its ballistics. At all events, we may assume that in the course of the next few years some radical changes in rifle armament will be made.

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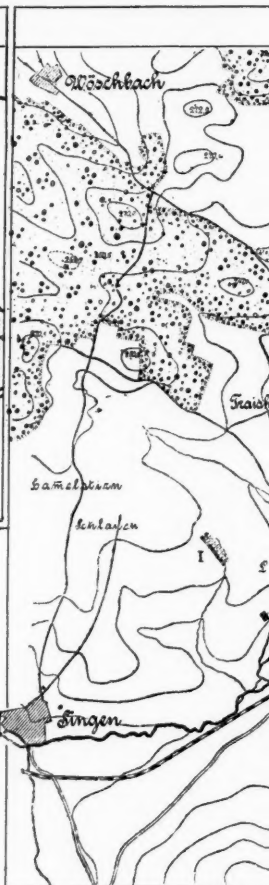
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SKETCH TO ILLUSTRATE GENERAL IDEA.



POSITIONS OF THE TROOPS
FOR PLAN OF GROUND FOR FIELD FIRING.

- I.—1st Brig. Div. 14th Arty., 1st position.
- II. } 3rd Battn. 111th Regt., 1st, 2nd, and 3rd positions.
- III. }
- IV. }
- V.—H.A. Brig. Div., 14th Arty.
- VI.—20th Dragoons, fighting dismounted.
- VII.—1st Brig. Div. 14th Arty., 2nd position.
- VIII.—109th Grenadiers.
- IX.—20th Dragoons.



DETAIL OF THE TARGETS FOR PLAN OF

- 1.—18 guns, 9 amm. wagons, 144 figures, 8 mounted men.
- 2.—382 head, head and shoulders, and head and body figures, 4 squad targets, 1 mounted man.
- 3.—211 head, head and shoulders, and head and body figures.
- 4.—400 Do. do. do.
- 5.—6 guns, 3 amm. wagons, 38 figures, 2 mounted men.
- 6.—12 guns, 6 amm. wagons, 76 figures, 6 mounted men.
- 7.—350 head and shoulders and full figures, 4 squad targets.

A FIELD FIRING EXERCISE WITH ALL ARMS COMBINED IN THE XIVTH GERMAN ARMY CORPS.

Translated from Nos. 89 and 90, of 1892, of the "Militär Wochenblatt" by Captain J. M. GRIERSON, R.A., D.A.A.G.

ON the 16th August there was carried out, under the personal direction of the General Officer Commanding the XIVth Army Corps, a field firing exercise on a large scale, with all arms combined, in the foot-hills of the Black Forest, between Karlsruhe and Pforzheim.

The ground chosen for the exercise lies half-way between Durlach and Pforzheim, at Königsbach, on the northern slope of the Kämpfelbach valley, the latter stream from Stein to Singen bounding it on the south. From the Kämpfelbach the ground rises in easy rolling slopes for 2,200 to 3,300 yards to the edge of a belt of wood, which is about 500 feet above the stream and is broken at the "Breite Lauch" by a broad clearing.

The belt of wood in the north and the deeply-cut gullies on the east at Stein, on the south along the Kämpfelbach, and on the west along the Pfünzbach, facilitated the keeping clear of the ground, a duty which was performed mostly by the cavalry.

The lesser half only of this ground is cultivated; of the cultivation, the tobacco fields were considered as impassable, and broad tracks were cut through those of ripe corn, while free passage was permitted over fields with root crops, stubble fields, and newly-ploughed ground. There were few fruit trees, and only one small building (a bleaching establishment) lay within the line of fire, which latter was evacuated by its inhabitants on condition of all damage being paid for.

The ground was everywhere passable for troops, but in places the steep slopes of gullies and hollows offered some difficulties to movement.

The above description of the ground is of importance, for it shows that, even in such a highly cultivated country as Baden, suitable ground for such exercises can always be found, and that, too, where the actual and probable damages to crops are so small as to be out of all comparison with the instruction gained by the troops.

On this ground, the movements of the troops, which were considered as forming part of a larger force, took place in the general direction of from Singen to the Heuberg, *i.e.*, from S.S.W. to N.N.E., so that the belt of wood and the high Heuberg materially contributed to the safety of the localities lying behind them. The weather was clear and cloudless, and the sun was very powerful.

Four battalions, four squadrons, and five batteries, from Karlsruhe and Durlach, took part in the exercise. The infantry was so formed that each company of the peace establishment represented only one

section (*Zug*) on the war establishment, the remaining two sections of each company being only marked by flags and by a few men. The cavalry was in four squadrons on the war strength, and each battery had with it its first line of ammunition wagons.

The following was the general idea:—

An Eastern Corps on the march from Bretten on Karlsruhe finds itself opposed by a Western Corps, advancing from the line Karlsruhe-Ettlingen, and takes up a position on the wood clearing (*Breite Lauch*), its left wing (targets) to the south of the woods, facing Königsbach. The right wing of the Western Corps advances by Singen; a strong right flank detachment has been pushed forward on Pforzheim in the Enz valley.

At the beginning of the exercise, the following was supposed to be the situation:—

The main bodies of the opposing artilleries are in action against one another across the Traishof valley, those of the Eastern Corps on the *Breite Lauch*, those of the Western on the *Hammelstirn* and *Schlauch*. The infantry is hotly engaged at the Traishof and to the north of it. Several Eastern batteries (Target No. 1) at the Junkerforten and advanced infantry detachments on the *Köpfl* and *Gregsberg* (Targets 2 and 3), to the north of Königsbach, form the left wing of the Eastern Corps.

Under this idea and its development, which led to, for the Western Corps, an outflanking and turning movement by Königsbach and Stein, and, for the Eastern Corps, to a movement fighting in retreat through the *Grosser Wald* and a rear-guard position on the *Heuberg*, the troops were assembled at 10 A.M. at the points from which they were to reach the boundaries of the ground. The rendezvous places, to which the troops marched straight from their garrisons on the morning of the 16th August, were:—

1st Brigade-Division, 14th Artillery	}	north of Singen.
3rd Battalion, 111th Regiment		
20th Body Guard Dragoon Regiment	}	north of Königsbach.
Horse Brigade-Division, 14th Artillery		
109th Body Guard Grenadier Regiment,		north of Stein.

Immediately before going into action, each unit received a short notice of the situation so far as it was concerned, and orders as to what it had to do.

The following was the course of the action:—

The 1st Brigade-Division, 14th Artillery, received, after its arrival to the north of Singen, at 10 A.M., orders to come into action as the right wing of the supposed artillery position between *Schlauch* and *Laier*, and to engage the hostile artillery at the *Junkerforten* (Target No. 1), while the 3rd Battalion 111th Regiment covered it on its right. The latter took position at *Breitwiesen*, pushing one company along the slope towards the *Gregsberg* (Target No. 3) and patrols up that hill.

In the advance to, and occupation of, the position (I) which had been reconnoitred by the Commander of the brigade-division, the

measures laid down in paras. 282 to 290¹ of the new "Artillery Drill Regulations" were practised, but the batteries opened fire simultaneously, without taking up a covered preparatory position (para. 290).

The hostile batteries, which were in position on a slope falling towards I/14th, were partly overshadowed by large fruit trees, so that, in spite of the generally prevailing good light and the dust caused by the shells striking, the observation of the fire was not easy. Still, each battery soon picked up its allotted target (paras. 305 and 308²); the range was, after a few rounds of common shell, fixed at 2,350 m., and shrapnel fire was at once opened. The results were excellent, as appeared later on, and only a few guns which lay in deep shadow escaped comparatively easily. Each battery (fifty-nine targets each) showed from 81 to 215 hits.³

During this artillery fight, the 3rd Battalion 111th Regiment had opened fire against the hostile shooting lines on the Gregsberg, and had pushed forward a second company. Fire was opened at first at a range of 700 m., across a broad low-lying meadow, but soon the shooting lines were pushed on to ranges of 600 and 550 m. From the top of the Laier it was easy to see that the correct ranges were very quickly found, for the bullets striking raised distinctly-visible cloudlets of dust, the thickest of which, *i.e.*, the centre of the cone of dispersion, lay close in front and in rear of the targets, and only comparatively few bullets flew wide; good results were consequently to be expected here, and the expectation was justified later on, as the 211 low targets showed 510 hits.

The effect of this fire was judged to be so good that the General Commanding ordered the battalion to drive the hostile infantry off the Gregsberg, and to advance to the attack of that on the Köpfle (Target No. 2); the latter were fired upon by one of the batteries ("Artillery Drill Regulations," para. 308 (6)) to prepare the attack, as it was assumed that the I/14th had got the ascendancy over the fire of the hostile artillery. This battery had, therefore, to change its target and find its range anew, and the former target (artillery) had to be re-divided among the other two batteries. It was not so easy to pick up the range against the infantry as it had been against the artillery, as the hostile shooting line was cleverly concealed behind a green bank and a corn-field, so that the formation of the short bracket was difficult. When the range had been ascertained to be 1,850 m., shrapnel fire was begun. 145 hits were made on the 110 lying-down and kneeling figure targets.

A battalion marked by flags was now brought up into line on the

¹ These refer to reconnaissance of the enemy and the ground, utilization of cover in approach, pace of approach, coming into action under cover, distribution of positions and targets, bringing up of the batteries, speed in opening fire, placing of guns, and preparatory positions.—J. M. G.

² Para. 305 lays down that the Commander of the troops points out the target, and the artillery Commander divides it among his command. Para. 308 refers to the conduct of the fire of a brigade division.—J. M. G.

³ The number of rounds fired is in no case stated.—J. M. G.

right of the III/111th, and carried the latter along with it to the attack. The advance was made by rushes, as the attackers were supposed to be under hostile fire, and the ground offered no cover. Soon the right wing of the shooting line, as it crossed the meadow land near the bleaching establishment, where it was partly also covered by the houses of the latter, got into a dead angle, where it could collect under cover for the final rush. The left wing of the shooting line on the slope of the Laier, which was on about the same level as the hostile skirmishers, advanced by rushes to about 300 m. from them, and then halted to cover the advance of the right wing by its fire. The charge was not carried out, as it was assumed that the enemy had retired, and only half a section was sent forward to pursue him.

At first each arm, though both were working together with the same object, had its own target to fire at, but now both turned their fire on to Target No. 2, and the III/111th entered upon the second phase of the task assigned to it, a portion of the artillery preparing its advance by its fire. The battalion was ordered to seek connection with the (supposed) infantry engaged on its left, the flank of which was marked, while the flag battalion advanced simultaneously on its right. It was re-formed in the position captured from the enemy on the Gregsberg, two companies being kept back in second line. The half section which had been pushed forward in pursuit opened fire at 600 m. against Target No. 2, and was at once reinforced by the remainder of the first line, a third company being also brought up from the second line to strengthen the first.

Favoured by the ground, the shooting line was able to advance to about 450 m. from the enemy, and there opened a steady, well-aimed fire (III). To prevent accidents, as the infantry advanced to close ranges, signals were passed to the artillery, by waving a blue flag, to cease firing. When it was assumed that the fire of the attackers had got the better of that of the enemy, the battalion advanced by rushes to about 200 m. from the position (Target No. 2) on which, until ordered to cease firing, the artillery had been playing, but here again the final attack was not carried out, as it was assumed that the troops of the Western Corps had captured the Breite Lauch, and were pursuing the enemy through the Grosser Wald, thereby forcing the hostile batteries at the Junkerforten (Target No. 1) and the infantry covering them on the Köpfle (Target No. 2) to withdraw with all speed, pursued by the fire of the battalion. In the 272 targets in the position (No. 2), 303 hits were counted.

It was assumed that a hot fight was raging in the Grosser Wald, and that it had come to a standstill to the north of Wasenhütte, and the battalion advanced across the Rösselsweg to about the same level, where it was received by a heavy fire from the north-east corner of the wood and the Adamsweg (Target No. 4), and had to halt and take up the fire-fight (IV). The flag battalion on its right had advanced over the Köpfle, and now took up a position écheloned back on the right of the III/111th.

In the meantime, the detachment which had been pushed towards

Pforzheim was supposed to have been attracted by the sound of the firing from Königsbach, and to have advanced by Bilingen. Its Commander was supposed to have hastened forward with four squadrons and the Horse Brigade-Division, and, on arrival at Königsbach, to have received orders to advance through the Grossgass and over the Löchle, to pursue the enemy retiring on the Heuberg. On reaching the height to the west of the Löchle, shells from hostile artillery on the slope of the Heuberg along the road from Stein to Bretten (Target No. 5) were supposed to fall among the column, and, at the same time, patrols (supposed) reported that Stein had, a quarter of an hour before, been evacuated by hostile infantry, which had withdrawn in a northerly direction, and that the Heuberg appeared to be occupied by the enemy.

The Horse Brigade-Division at once came into action (V) on the height west of the Löchle against the hostile battery on the Heuberg, but immediately on opening fire it was also fired upon by two batteries of the enemy's artillery (Target No. 6) which had come into action on the Käsäcker. It was hard to make them out, as they had apparently taken position in rear of a thick and high hedge, and therefore it was extremely difficult to find their range. A portion of the brigade-division, which was only two batteries strong, had to change to this new target ("Artillery Drill," para. 308 (2)). Thus the artillery and cavalry were now in an extremely precarious position. Surprised by hostile fire on reaching the top of the hill in its movement of pursuit, the brigade-division had been forced to come quickly into action, in the hope of soon getting rid of its weaker antagonist, when it had been suddenly fired into by an equally strong force of hostile artillery, and the concentric fire of those two groups must be superior to its own. While one battery took up on even terms the combat against Target No. 5, the other had to oppose the second group of the enemy, according to the instructions of the "Artillery Drill," which lays down the principle that no portion of the enemy's artillery should be left wholly unengaged.

The cavalry regiment had at first formed up in a hollow to the right front of the guns, to protect them against the infantry which had been reported as retiring from Stein, but when further (supposed) news was received that the heights north of the Eisenberg were occupied by thick lines of skirmishers (Target No. 8), and that a farmstead on the western slope of the Heuberg (Target No. 9) was held, the Dragoon Regiment received orders to dismount and occupy the height in front of it (VI). Hardly had this position been taken up by all four squadrons, the ground being very cleverly utilized, when the advance of hostile shooting lines against their left flank across the hollow running down from the Käsäcker was reported (Target No. 7, some of the targets of which were made to appear and disappear). The attacking infantry was concealed from the artillery by the configuration of the ground, otherwise the latter, according to para. 330 (1) of the "Artillery Drill," would have turned the fire of a portion of its guns upon it without heeding the hostile artillery, so the cavalry had to meet the attack single-handed. Thus the task of

the dragoons was not, as is usually the case with cavalry, the mere preliminary stage of a fight, but was a phase of a larger action in close connection with the other arms. The front taken up by the hostile infantry reported between the Eisenberg and the Henberg, and the direction of its attack, forced the dragoons to fire half-left, as it was impossible to form a new front facing the enemy from the supports. They therefore opened a heavy quick fire at 500 m., while several sections fired volleys at the closed bodies of the enemy, and, when the latter was supposed to have been checked by this fire and to have halted to return it, the whole changed over to steady individual fire. The results were apparently good.

It was assumed that the 109th Grenadiers, who were following the dragoons and artillery, had, on arrival at Billingen, learned that Stein had been abandoned by the enemy, and had been ordered to move on that village. On reaching it, the situation was explained to its commanders, and orders were given for the regiment to advance to the attack along the Stein-Bretten road. The approach of the Grenadiers was supposed to cause the withdrawal of the infantry which had attacked the 20th Dragoons. This movement was made by the successive appearance and disappearance in retreat of the various targets, and caused the dragoons to reopen a heavy fire.

The cavalry regiment then awaited the development and further advance of the Grenadiers, remaining dismounted as escort to the guns until its services were no longer required, when it remounted, and, on its Commander's own initiative, moved round the rear of the 109th, and prepared to cover the right flank of the line of battle, as was required by the tactical situation. It did not again come into action.

In the meantime, the situation of the artillery to the west of the Löchle had ceased to be difficult, as, when the enemy had been driven from the Junkerforten and the Köpfe, and a stationary fire-action had been entered upon between the III/111th and the infantry along the Adamsweg, the 1st Brigade-Division 14th Artillery had received orders to support the horse artillery, and advance to the Hochberg, north-east of Königsbach, with a view to engaging the guns on the Käsäcker (Target No. 6). The Brigade Division came into action in the same methodical manner as it had done on the Laier, and opened fire (VII) on the enemy's guns with all three batteries simultaneously, one battery being directed on one of the enemy's, while the two others engaged the other. The observation of the fire against the hidden target was not easy at first, and the auxiliary observers ("Artillery Drill," para. 308 (5)¹) reported that most of the rounds were short. On the two batteries of Target No. 6, 253 and 318 hits were counted respectively.

The horse artillery could now turn the fire of both batteries on to Target No. 5, and was in a short time assumed to have put it out of action. It was then, therefore, able to prepare the attack of the Grenadiers by firing on the hostile infantry (Targets Nos. 8 and 9).

¹ Parties sent out to a flank and provided with mounted men to carry reports to the battery.—J. M. G.

Thus this brigade-division had in the various phases of the fight, and even under difficult circumstances, opportunity of practising change of object and distribution of fire, until at last it combined with the infantry in firing against the same target—an extensive and strong infantry position—to prepare for the decisive attack, while the other brigade division engaged the hostile artillery ("Artillery Drill," para. 322). 96 hits from artillery projectiles were counted on the 59 figures, &c., of No. 5 Target (a battery).

The central point of the position was an enclosure with a high barn, a dwelling-house, and a stable, partly surrounded by a boarded paling, and partly (in front) by a natural hedge. This was strongly occupied by skirmishers, and other bodies were placed in favourable positions of the ground in rear of both its flanks, thus avoiding the disadvantage of parties sent to turn the flanks of such a position having nothing to fire at, as only the edges of the targets are turned towards them. This écheloning back of the targets also permitted of the general line of fire being adhered to.

The horse artillery soon obtained the exact range by common shell and changed to shrapnel, the fire, according to para. 306 (3) and (4), being so distributed that all parts of the enemy's shooting line were kept engaged. The results showed 39 hits in Target No. 8 (300 lying-down and kneeling figures), 38 in Target No. 9 (200 various figures), and 1,128 hits on the farmstead. The want of common shell prevented the effect of artillery against an occupied enclosure and occupied shelter trenches being fully demonstrated.

The Grenadier Regiment, advancing from Stein, now occupied the Eisenberg and the hollows near it with weak shooting lines, followed by two battalions alongside of one another, while the 3rd battalion followed in rear of the right wing as a reserve. After the hostile position had been reconnoitred, the two leading battalions formed for attack, at about 1,600 m., under cover of the hill, each with three companies in front line, and skirmishers thrown out from each, the supports following at a considerable distance behind the ridge of the hill, and thus concealed from the view of the enemy. The second line companies were écheloned on the outer flanks, the third battalions remained at first in rear of the right flank, also under cover of the ridge, and the dragoons covered the right of the force (X). The regiment was thus formed on a front and depth corresponding to the configuration of the ground, and its strong shooting lines pushed forward, carefully keeping touch along the front.

Fire was opened between 600 and 700 m., and the shooting lines, after being reinforced, advanced by rushes to close range, about 500 m. from the hostile position (VIII), using the large and small terraces on both slopes of the ridge, as well as bushes and hedges, to cover their movements. In such an advance it could not be avoided that men deep down in the hollows fired high, and consequently produced little effect. From the first, the left wing of the shooting line was able to support the horse artillery in its engagement with the hostile battery (Target No. 5), and with this view the second line company on the left wing was also brought up.

When the enemy's fire was assumed to have slackened, and the shooting line therefore began to advance closer on to his position, a flank attack was represented by Target No. 10 (180 movable figures). The pause necessary to repulse this attack delayed the left wing of the shooting line, while the other portions of it pushed on to 300 m. from the position. In the meantime, assuming that he had got the upper hand of the fire from the enemy's position, the Commander of the Grenadier Regiment had pushed forward his 3rd battalion, hitherto kept in reserve, across the Stein-Bretten road, to outflank the enemy and carry out the final attack. When this manoeuvre was going on, a hitherto concealed enemy (Target No. 11, 200 head targets were turned up) made an attack on the right flank of the battalion, which had to form a new front from its supports, to meet this advance by rapid fire.

After this attack had been repulsed, the storming of the position had to be carried out, and to prevent accidents all firing was stopped by pre-arranged signals. This was effected in a very few seconds, and the shooting lines were carried forward by the closed supports being brought up into them, only the 3rd battalion containing companies in reserve.

In the meantime the artillery had received orders to limber up and advance to support the infantry attack, but by special directions these orders were not carried out in their entirety. The cavalry was held ready to pursue. After the farmstead (9) and the infantry positions near it (8) had been taken, it was assumed that the enemy was also in full retreat from the Adamsweg and Käsücker, and the order for the pursuit was given, upon which the Dragoon Regiment pushed forward round the right flank.

At about 1.30 P.M. the exercise came to an end. The Grenadier Regiment had made 2,030 hits against Target No. 8 (735 figures), 957 against No. 9 (300 figures in the enclosure and behind hedges), 1,831 against No. 10 (180 figures), and 746 against No. 11 (200 figures).

From the above account of this field firing exercise with all arms on a large scale, it will be seen that the ground was admirably chosen to meet all requirements, and that by this choice the difficulties of exterior security and of closing the approaches were got over, while interior security was attained by the arrangement of the exercise without interfering with its tactical development. Special pains were taken with the making up and arrangement of the targets, for which certainly a tactical idea had been given, but which were placed with due regard to the configuration of the ground, and in positions which took every advantage of its features.

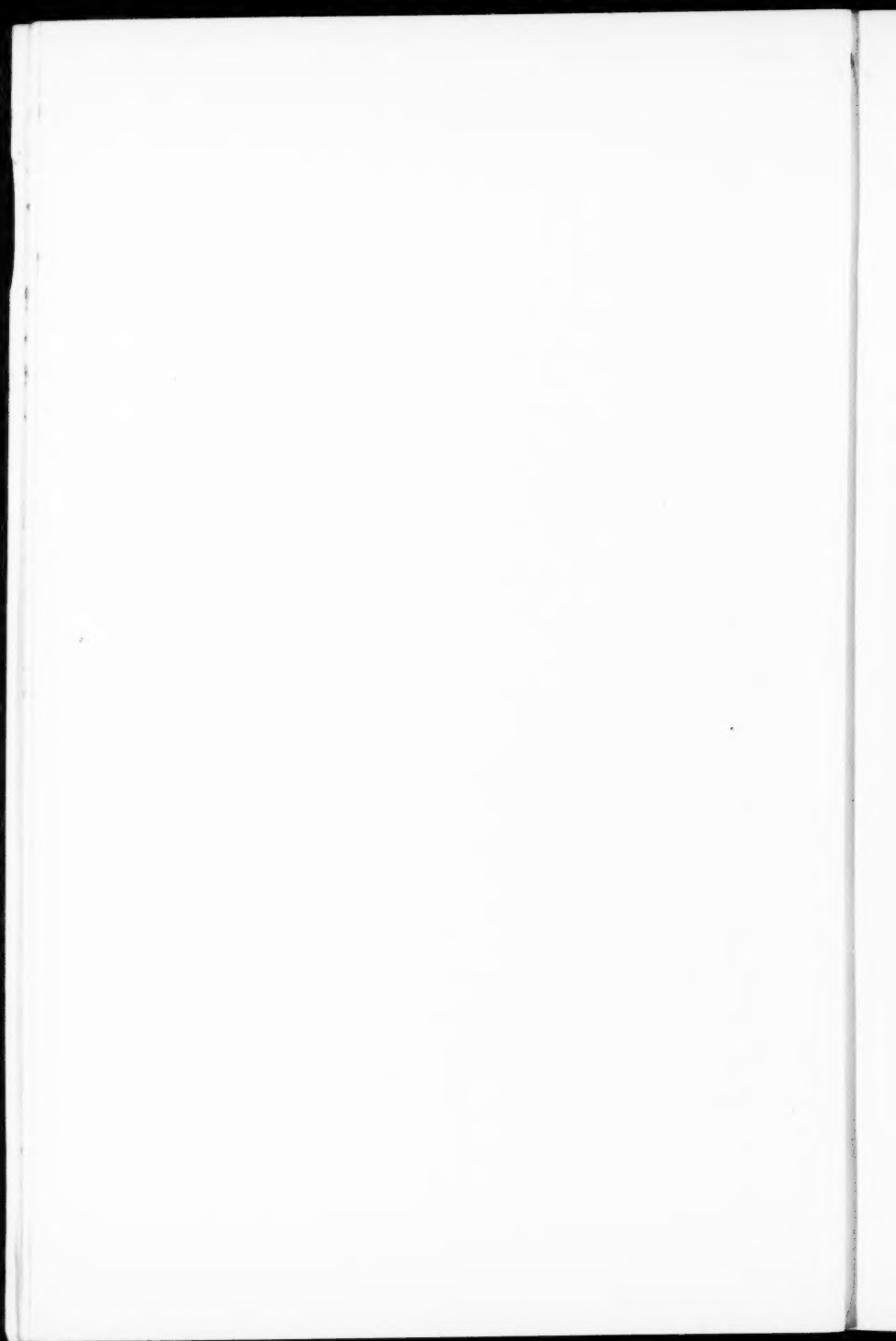
As regards utilization of the ground, grouping and development of the troops, and employment of the different descriptions of fire, the exercise offered to all arms a number of varying tactical situations which, when taken together, gave each single phase of the action its own importance, both as an episode by itself, and as a part of the whole, and thus a fairly accurate picture of a real action was presented.

The exercise was so carried out that the various arms came successively into action, while at times all worked together. The ground permitted of the artillery continuing its fire until the infantry had approached comparatively close to the objects it was engaged against, and could open an effective small-arm fire upon them, and this was mainly attained by the circumstances that towards north and east there was a completely free line of fire, and that the infantry could advance in safety across and along the deep hollows, and approach the targets from the flank. Targets Nos. 2, 8, and 9 could for a long time be kept under both artillery and infantry fire, and at the farmstead (No. 9) the preparatory action of the artillery before the final attack was carried out was clearly shown to the infantry.

Compared with former exercises, the supply of ammunition to the troops was on a much more liberal scale, which permitted of the various episodes being made of longer duration, and more like those of real warfare. The infantry, which carried about 90 rounds per man, had still some ammunition left at the close of the action, but the artillery, which carried only 20 rounds per gun, had by that time begun to run very short, so that its co-operation with the other arms could not be as fully demonstrated as was desired, and as was one of the main objects of the exercise.

The composition of the infantry differed materially from that adopted at previous exercises, for which, as a rule, battalions on war strength had been formed. The latter plan, however, is not good if it is desired that all men of the force shall have an opportunity of firing. As there are no losses in peace, when the last supports are brought into the shooting line, the latter becomes so crowded that either the regulation front is exceeded, or the men get into dangerously thick masses. By the formation adopted, however, these disadvantages were avoided, and it was possible to let every man take his full share in the benefits of the exercise. A further advantage was that the phases of the fight could be more varied, thus allowing of each company being placed in several situations in which various principles of fire-tactics and leading could be exemplified. The simplicity of the special idea permitted also of each subordinate leader thoroughly grasping the plans of the Commander, and carrying out his task according to the situation in which he was placed with a completely free hand as regards the utilization of the ground, the formation of his command, and the control of his fire. In this freedom of action lay the main value and the great lesson of the exercise, not only for those taking part in it, but also for the spectators. The superior Officers attached to each unit as Umpires with a view to preventing accidents had never occasion to interfere in any way, and everything went off in a natural manner, and as it would happen in war.

The day of Königsbach will mark a stride forward in our method of training for war.



RECENT WORKS BY CAPTAIN HOENIG.¹

(With Map.)

By Captain W. WESTERN, R. W. Kent Regiment.

THERE is something positively refreshing in Captain Hoenig's writings. Whether one agrees with his conclusions or not—even when he would appear to have been misinformed as to his facts—the conscientious labour of the writer, combined with his absolute independence, give a charm to his writings which is usually wanting in so many of the German military writers of the present day. Captain Hoenig, at least, does not belong to the cult of the “jumping cat.” He has his opinions, and he is sufficiently independent to express them. Captain Hoenig's first book consists of two parts. The first part deals with the strategy of the 17th and 18th August, 1870; the second mainly with the tactics of the VIIth, VIIIth, and IInd German Army Corps.

The second work under review is a pamphlet issued in reply to the various strictures made by certain German military papers on the first work.

The third work is a full account of the capture of the quarries south of Point-du-Jour by the 35th Regiment, and contains information which Captain Hoenig was not possessed of when he wrote the “Twenty-four Hours.”

We propose dealing with the strategy and tactics of those eventful days in the order adopted by Captain Hoenig.

The reasons given for a thorough discussion of Von Moltke's strategy appear to us so sound that they are reproduced verbatim: “A superficial acquaintance with men of judgment, and with military literature, would lead one to suppose that the 17th and 18th August formed a dark spot in the life of Field-Marshal Von Moltke, and formed several dark spots in the lives of others; that consequently it would be better not to dwell on any of their various sins of commission and omission. ‘It is an ill bird that fouls its own nest;’ one should have some consideration towards men who deserve well of their countrymen; it would be unpatriotic and would show a want of tact to discuss matters which would bring unpleasant recollections to one person or another. Such are the arguments most

¹ “Twenty-four Hours of Moltke's Strategy, developed and explained in connection with the Battles of Gravelotte and of St. Privat, on the 18th August, 1870. First complete description of the fighting of the First Army at the Mance Ravine.” By Fritz Hoenig. With two maps. Luckhardt, Berlin, 1891.

“The Royal Headquarters and Army Headquarters on the 17th and 18th August, 1870.” By Fritz Hoenig. With a sketch map, Second Edition. Luckhardt, Berlin, 1892.

“The Fighting near the Quarries of Rozerieulles at the Battle of Gravelotte on the 18th August, 1870.” By Fritz Hoenig. With a map. Second Edition. Luckhardt, Berlin, 1892.

commonly in vogue. As far as consideration and tact are concerned, there should hardly be a difference of opinion nowadays, since Moltke himself has been induced to leave behind him a history of the war of 1870-71. The history was written in order to correct many of the errors of the Official History, which, as we know, was written with tact and consideration."

The reluctance to discuss publicly the events of the 17th and 18th August is patent in our military literature. The cause of this reluctance lies less in a lack of judgment, and of knowledge of the actors, but is due rather to a feeling of consideration for the persons concerned. Though these considerations were and are unsound and unfounded they were still, to a certain extent, comprehensible, owing to the then ruling spirit of the age; for, after all, man is but a slave to that spirit!

A thorough study of these days will, however, cause one to quickly recognize that this was no dark spot in Moltke's life, that though these days were more full of cares and worries than any others, they were also the most glorious in the campaigning life of the Chief of the General Staff. Moltke had to combat various difficulties and different people's sensibilities, he had to spare the peculiarities and authority of undoubtedly deserving men, who did not always understand the Field-Marshal; at the same time he felt it both desirable and necessary that nothing should occur to annoy his Royal Chief, and thereby cause a more serious conflict, at the very moment when the operations were ripening towards a tactical decision. By the 18th of August the feeling of irritation among the most senior Generals had reached such an intensity that it required all Moltke's grandeur of character, all his strength as a great General, all his calmness, all his presence of mind in this turmoil, to rescue his great idea, namely, to maintain the separation, which events had brought about, between the two hostile armies, and then, by passing south of Metz, obtain the advantage of the interior lines against Bazaine, from the dangers which threatened it.

All Moltke's tact, confidence in his own powers, patriotism, and wonderful energy had to come into play to prevent his being ground between two powerful millstones (the King and the Commanders of the 1st and 2nd Armies), for this would have led to the destruction of his plan.

During these momentous hours, not only was a heaven-born General striving with men who could not grasp his ideas, but a hero in strength of character, courage, power of action, patience, and humility was striving against vanity, historical fame, popularity, and years of devoted service; and one may safely affirm that in this struggle anyone else would have been wrecked. If we consider the above conditions, and remember that, in addition to the military considerations, the social position and authority of certain personages had their influence, we must arrive at the conclusion that at no period of his life did Moltke shine more, both as a General and as an individual, than at this time, when he was not understood as he had expected he would be.

Captain Hoenig lays stress on the fact that, on the 18th August, two distinct battles were fought: one at Gravelotte, the other at St. Privat, and that, whereas at the former place the influence of the Royal Headquarters was felt, in the case of the IInd Army all influence over Prince Frederick Charles ceased shortly after 5 p.m. We certainly find no reference made to any reports received after 5 p.m. in the official account. On p. 169, vol. ii,¹ of the same we are informed that it was only during the night of the 18th and 19th August that the Royal Headquarters were informed of Prince Frederick Charles' victory at St. Privat. The battles of the 18th illustrate the fact that if the headquarters of a large force remain in rear of one flank, a general direction by the same over a fight, fought under the conditions that existed on that date, can only be maintained by means of a large amount of wear and tear on the part of the different Staffs, and, at the best, this influence must be an insufficient one.

The battle of Gravelotte was fought by the VIIth, VIIIth, and IInd Army Corps, supported on the right by the Ist Army Corps and on the left by the IXth. Here it was that the King commanded in person. St. Privat was fought by the Guard, XIIth and Xth Corps, supported on the right by the IXth Corps, which formed a weak connecting link between the two wings, and which, as a matter of fact, fought a third battle on its own account.

To understand the strategical situation with which Von Moltke had to deal on the 17th and 18th August, it would appear best to state the exact positions of the contending forces at about 2 p.m. on the former date.

Beginning with the French, the 2nd Corps, with Lapasset's Brigade of the 5th Corps, extended from St. Ruffine to about half-way between Point-du-Jour and Moscow; the 3rd Corps prolonged to the right as far as Montigny-la-Grange; the 4th ran from thence to north of Amanvilliers; the 6th was on the right flank, on both sides of St. Privat. Du Barnil's Cavalry Division was in rear of the 6th Corps, and the Guard Corps, Forton's Cavalry Division, and the main artillery reserve were in rear of the 2nd Corps. With the exception of some weak advanced posts, the main road from Ars by Gravelotte, Malmaison, Verneville, Halonville was free of troops. It was only at Ste. Marie-aux-Chênes that stronger bodies of French troops could be encountered.

The Germans were as follows:—Ist Corps at Courcelles-sur-Nied, 3rd Cavalry Division at Coin-les-Cuvry, 1st Cavalry Division at Corny, VIIth Corps in and near Ars, VIIIth Corps at Gorze, with one brigade in rear at Arry, IXth Corps south of Flavigny, 6th Cavalry Division west of the same, IIIrd Corps at Flavigny and Buxières, Xth Corps at Tronville, 3rd Cavalry Division and 3rd Guard Cavalry Brigade westward of Tronville, XIIth Corps at Mars-la-Tour and Puxieux, Guard at Suzemont, 1st Guard Cavalry Brigade at Sponville, 12th Cavalry Division at Parfondrupt, IInd Corps at Pont-à-Mousson, IVth Corps at Menil-la-Tour.

¹ The references are to the official translation, by Capt. (now Col.) Clarke, R.A., ret.

The opposing armies were consequently massed; the French extended over a front of 8 to 9 miles, the Germans, excluding the 1st, IIInd, and IVth Corps, and the 12th Cavalry Division, over a front of between 12 and 13 miles.

For the 18th, the co-operation of the 1st and IIInd Corps might be reckoned on, if they were required.

It is apparent that Marshal Bazaine had relinquished all the roads running west and north-west; the only one that he could safely use was the Thionville road.

We further see that the opposing forces were at right angles to each other, the connecting point being at the Bois de Vaux. The outer flanks were about 10 miles apart.

There might have been some excuse for the positions of the French cavalry. The inactivity of the German cavalry and their backward position was strategically indefensible. Captain Hoenig suggests the reason for this want of activity on the part of the cavalry in the first pamphlet under review. At the foot of page 32 he informs us "that undoubtedly the French had suffered no tactical defeat on the 16th; the excessive caution displayed by the Germans throughout the whole of the 17th is a pretty clear indication of their lack of confidence in themselves." Be this as it may, the only General who acted properly was the Crown Prince of Saxony, who sent his cavalry well to the front (to Parfondrupt). A similar proceeding on the part of the remainder of the cavalry would have led to reconnaissances being made towards Aboué and Conflans by the evening of the 17th. Had such been the case, the cavalry must have struck the enemy at Ste. Marie-aux-Chênes; they might, therefore, have fully cleared up the situation on the evening of the 17th, and rendered their reports in ample time for the Chief of the Staff to frame his directions accordingly. Both the French and the Germans were anxious to avoid fighting under any circumstances on the 17th. Both had the same object in view, though for different reasons. This fact gives us an opportunity of showing how Generals differ. A real cavalry leader would, by the manner in which he handled his men, have found out all he wanted to know about the enemy, and probably without the loss of a single man or horse. The Generals on both sides knew but little of what they should have known before they issued definite orders, for the simple reason that the skilled leaders were wanting, who would have understood to keep the cavalry in the palm of their hands, so as to avoid a battle, and at the same time thoroughly reconnoitre the enemy.

A great deal of space has been devoted in discussing the proper position for a Headquarter Staff both before and during a great battle. There has been such a tendency throughout Europe to fall down and worship everything the German Headquarter Staff did, simply because it was successful, that Captain Hoenig has done a universal service in questioning its infallibility. He compares the action of the German Headquarter Staff with that of Napoleon under similar conditions.

The nearer Napoleon was to his enemy, the further forward were

his Headquarters. On the night of the 13th October, 1866, they were in immediate proximity to the enemy. It is, of course, impossible to lay down any precise rules as to where the Headquarter Staff should be, but the following guiding principle should be remembered. The actual position of the Headquarters must always be dependent on the probable intentions of the enemy.

Napoleon's principle of being as close to the front as possible before an impending battle is as sound now as it was then; for, though the field telegraph can convey information practically instantaneously, the road to the battle-field must be travelled over by a horse, whose powers of endurance and speed are, after all, limited. Even if the Chief himself is both excellently mounted and also a first-class rider, the argument still holds good, for the horses conveying the subordinate Staff Officers have to be considered, to say nothing of the staying powers of the Staff themselves. Should the Headquarter Staff be many miles in rear of the troops, it may often be necessary for the Staff to ride forward at a rapid rate, and this must tell on the physical powers of the several members composing it. In action, the strain on the minds of Staff Officers is so great that every endeavour should be made to lessen any unnecessary physical exertion.

Such a course of action assumes that considerations for the sheltering of the Staff are relegated to the background. Should, however, the Commander-in-Chief be a man greatly advanced in years, the question of shelter must be considered, if he is to appear comparatively fresh on the battle-field. A General whose age is between thirty-five and forty-five will think nothing of spending the night in a tent in the midst of his troops, or even, if necessary, of dispensing with rest altogether; but it would be unreasonable to expect this from a General of seventy years and upwards. This shows us how desirable it is for a General to be vigorous and capable of standing hardships, to enable him to face extraordinary discomforts should special circumstances render it necessary for him to do so. Let us contemplate the Napoleon of Jena, Borodino, and Dresden in the position of the German Commander-in-Chief on the 17th August. We should have seen that the former would have undoubtedly stated precisely where he was to be found at certain fixed times, but that during these intervals he would have been here, there, and everywhere; he would have left no means unturned to obtain precise information as to the enemy's position.

On the 13th October, 1806, on his arrival at the front at 4 P.M., Napoleon personally reconnoitred the ground near Jena, although he had previously ridden many miles. (Such reconnaissances, of course, do not preclude the use of cavalry, which, after all, is the best way of obtaining information.)

We may be certain that the news of the battle of the 16th would have caused his early arrival, say at Rézonville, on the 17th, where he would have seen for himself how matters stood; he would have summoned the Commanders of both armies to his side, and, after obtaining the fullest information possible, he would have dictated the orders for the battle. As the right German flank would be exposed

to the greatest amount of danger while the forces were forming up, Napoleon would not have left the neighbourhood while this was occurring, reports would have easily reached him, and instructions be sent with equal facility. He would have spent the night of the 17th somewhere near the right flank, and at about 5 A.M. on the following morning he would have been in the saddle, first to observe how matters stood on the right flank, then, pursuing a northerly direction, he would have attempted to increase his knowledge of the state of affairs in that portion of the arena.

Napoleon, in his earlier days, would, without employing a single squadron of cavalry, have known by 7 A.M. on the 18th August whether any changes had occurred since the previous midnight, and if so, what changes. From that moment he would have remained with his Staff at the proper place for him to be—somewhere near Verneville—and never moved from the place until, possibly, matters were being decided at St. Privat. Napoleon would have considered it his business to be near his left flank, once matters had been put on the right track at the pivot (the right flank).

During the action, the German Headquarters were between Gravelotte and Malmaison; the choice of this spot was strategically wrong, and tactically unfavourable.

The correct position for the Headquarter Staff during a battle, for which preparations have been made, should be either somewhere near the centre, where they are more easily reached, or, should that be impracticable, they should be in rear of the strategic flank. By their position the Headquarter Staff should be able to deal, in all directions, with the most important features of the action, such as the time for commencing the fight, for bringing up the reserves, nature of flanking movements, &c. They should, however, be sufficiently in rear to remove them from the temptation of interfering with minor matters, for then, while attending to details, which it is the business of others to see to, the main threads may be lost, and there is the risk of their committing the greatest fault of all—commanding instead of directing.

A great difficulty the Headquarter Staff had to contend with was the excessive number of individuals who were attached to it.

Political reasons led to the Headquarter and Army Staffs having a large number of princely personages attached to them.

At the Royal Headquarters the age of the King was a constant factor that had to be considered, and at the Headquarters of the different armies other considerations seemed to have had their influence.

On the 16th August, while the battle was being fought, Prince Frederick Charles was at Pont-à-Mousson; he, consequently, reached the battle-field at a late hour. He spent the night of the 16th at Gorze; Steinmetz was at Coin-sur-Seille. The Royal Headquarters reached the heights near Flavigny from Pont-à-Mousson at 6 A.M. on the 19th; Moltke's orders for the following day were issued at 2 P.M. At that hour nothing was known as to the position and intentions of the enemy. Why were these orders issued at such an early period of

the day? The reasons given by Captain Hoenig are as follows:—As the crow flies, the distance from Pont-à-Mousson to Flavigny is 14 miles. Considering the King's advanced years, the exertions to which His Majesty had already been put were considerable, and one can fully understand the anxiety on the part of his Staff to spare him. The events of the following day were hidden in the future; the Germans, however, wished to fight the French. This meant fresh exertions for the Royal leader, and exertions which might well be considered beyond the powers of a man of his age. Consequently, there was a great anxiety to ensure, not only an early rest for the King, but a complete one. It was impossible to obtain this near Flavigny; the smaller farms and hamlets could not contain the numerous Staff, the larger ones were occupied by wounded men. It might have been possible to find suitable accommodation at Novéant; since, however, they could not remain on the field of action, it was considered preferable to return to Pont-à-Mousson. An early start back was therefore necessary. The Royal Headquarters came from Pont-à-Mousson and returned there on the 17th, and on the following morning rode forward again to Flavigny. In four-and-twenty hours they rode 42 miles.

A General who, like Napoleon, was in the habit of reconnoitring himself would, instead, have ridden as far as Auboué and back, a matter of 17 miles, and would, by this means, have known pretty well as much as he wanted to know.

Further, a young Commander would have remained on the spot till the receipt of the reports sent in at the end of the day, and would, in all probability, have spent the night among his troops.

The reports that are received can only be properly fitted together when the events of the day are before one. This is impossible until dusk. The orders issued at 2 P.M. were issued before the French evacuated Gravelotte, for this did not occur till 3 P.M. They were consequently issued while the enemy was known to be making changes in his dispositions. It must, however, always be remembered that Moltke was fully aware of this fact.

Captain Hoenig's critics have taken him severely to task for presuming to suggest that the King's age had anything to do with his return to Pont-à-Mousson, and he is accused, if not of committing an act of treason in suggesting it, of at least offending against the canons of respect and good taste. We propose giving the reasons urged by the "Militär Wochenblatt" for the return to Pont-à-Mousson, together with Hoenig's reply to the same. The "Militär Wochenblatt" states that the Royal Headquarters were not only the central point for the 1st and 2nd Armies, but also for those portions of the German forces which were still to come up to the front, as well as for the 3rd Army. Which was the right course to pursue? Was it right to ignore these latter troops owing to the impending general action by the 1st and 2nd Armies, or were not the Headquarter Staff compelled to return to the spot whence they could pick up all the threads of the German movements? Telegraphic communications had been established between Pont-à-Mousson and Gorze by midday

on the 17th. The Headquarter Staff were consequently justified in assuming that important reports concerning the enemy near Metz would reach them without delay. Did not General Von Moltke form the opinion that the situation at 2 P.M. on the 17th August was sufficiently cleared, as to prevent the probability of any serious dislocation of the troops on either one side or the other occurring during the course of the day?

Hoenig should at least have discussed these points. He would eventually have arrived at the conclusion that the return to Pont-à-Mousson was undesirable; but he would have been forced to recognize that it is not so easy to act in war as it appears after the event, when additional knowledge clears up everything. He would, above all, have avoided making a serious and unfounded charge against the King, which both duty and proper respect should have rendered impossible; he would equally have avoided making an accusation against Von Moltke, who habitually carefully balanced and weighed any possibly conflicting duties.

It is possible that as outsiders we are less sensitive to criticism about the late German Emperor and Von Moltke than the Germans, for we fail to see where Hoenig has overstepped the bounds of duty or of good taste.

In the pamphlet under review, Hoenig deals largely with the case as it affects him personally. To us that is a matter of secondary importance. The strategical aspect, however, might be further considered with interest.

There was, he says, no reason for considering the position of the IIIrd Army. Even if the general action was delayed till the 19th or 20th August, though the IVth Corps, which formed a portion of the IInd Army, might have been brought into the sphere of action, no direct assistance could be expected from the IIIrd Army.

The reason armies receive directions is to obviate a series of special orders on the part of the Headquarter Staff. Directions consequently are intended to cover general objects, and longer periods of time.

Orders are intended to meet certain conditions at fixed periods of time. In this manner both the Headquarter and the Army Staffs maintain the freedom of action which is so desirable, and labour is diminished. The Headquarter Staff can further concentrate all its attention on the matter which at the moment appears most important, with the calm conviction that the armies which are not within tactical reach will act according to the general conditions of the campaign. According to the general conditions as known at the Royal Headquarters, the IIIrd Army was pursuing a certain object, which did not appear to call for any interference on the part of the Headquarter Staff. Even supposing any interference to have been necessary, the return to Pont-à-Mousson, where all the means for communicating orders were located, was unnecessary. The lesson to be learnt is that a Staff may be too unwieldy, but the argument that it was necessary to return to Pont-à-Mousson to issue orders is as unsound as the argument that a gunner, in order to make proper use of

his gun, should leave it to get ammunition from the ammunition column.

The Headquarter Staff had not yet rid itself of some of the bad habits which the war of 1866 had proved awkward and inconvenient.

Here are Von Moltke's own views on a certain situation, and related in the third volume of his "*Gesammelten Schriften*," p. 425: "The King spent the night in a hamlet on the battle-field, both my Staff Officers and I had, however, to drive back 22 miles to Gitschen, where the offices were. It was midnight before we arrived. We could get nothing to eat at that hour, and I was so exhausted that I lay down on my cot without removing my sash or great-coat, and fell asleep at once. In the meanwhile fresh orders had to be prepared and laid before His Majesty at Horitz the following morning." We now learn that the evil consequences of having all the means of issuing orders so far in rear had already made themselves felt in 1866. To return to Von Moltke as he was in 1870. Moltke represented a certain school of thought, and he considered everything that his opponent could do and should do from the point of view of this school. Moltke's school, in contemplating the possible action of an opponent, always presupposed that the latter would take the steps from which he would derive most advantage. This must be borne in mind in considering the orders of 2 P.M. on the 17th August, which were as follows:—

"The IInd Army will be formed up at 5 o'clock to-morrow morning, the 18th, and advance in échelon from the left between the Yron and the Gorze brooks (generally between Ville-sur-Yron and Rézonville). The VIIIth Army Corps will accompany this movement on the right flank of the IInd Army. Upon the VIIth Army Corps will devolve, in the first instance, the duty of protecting the movements of the IInd Army against any hostile enterprises from the side of Metz. His Majesty's further arrangements will be dependent upon the measures of the enemy. Reports will, for the present, be sent to His Majesty on the heights south of Flavigny.

(Signed) "V. MOLTKE."

Moltke at that time had no reason for supposing that Bazaine was actuated by political motives. The strategical disadvantages to the French of a decisive action backed on Metz were obvious. To the great strategist the improbability of Bazaine's actual action appeared as great as the conduct of the Prussians during the Jena campaign, when they remained in rear of the Saal, appeared to Napoleon. On the 18th August the French committed an act which exposed them to the greatest strategical dangers. Neither a Napoleon nor a Moltke can believe in such errors without ample proof. If he is not to go wrong, a strategist must always keep in his mind's eye what the enemy's correct move, under certain conditions, would be. Moltke's orders at 2 P.M. on the 17th presupposed that the French would act strategically correctly, but it was so framed that the German march towards the north would have led them past the French on the 18th.

Napoleon's action in 1806, when he expected to find the Prussians at Gera, was very similar. Napoleon, however, when he discovered his error did not rest till he had rectified it, before the battle. Moltke did not succeed in doing so before he fought his action. Had Moltke and his Royal Chief been thirty years younger, they too would have acted as Napoleon did; their erroneous assumption could have been rectified more quickly and with greater ease than Napoleon was able to rectify his, as the distances with which they had to deal were much less than the distance from Gera to Jena; it was also easier to observe what had occurred, the days were longer, and the means at hand for conveying orders were more numerous and were better schooled. Though no blame can be attached to Moltke, because he only believed in the improbable, when he was thoroughly convinced that it had taken place; blame must rest on him for being unaware till such a late hour of what had occurred. The reason for this ignorance was that both cavalry and Staff Officers had neglected to reconnoitre. The most incredible things occur in war. A methodical mind, and still more a conscientious mind, finds them more difficult to deal with than a bold and roving conqueror would find it. Once again during the campaign Moltke had to deal with the improbable and unforeseen, mainly before the decision to march towards Sedan. There also we find Moltke credited his enemy with doing the right thing, till all doubt was absolutely solved. At Gravelotte Moltke nearly missed the French, although the German right flank had been continuously engaged with the enemy since the 16th. Before the operations leading to Sedan both opponents nearly marched by each other.

It will have struck our readers that Hoenig constantly asserts that had Moltke or some members of his Staff personally undertaken reconnaissances, some, if not many, of the errors of the 18th August would have been obviated. As Napoleon constantly undertook reconnaissances himself; it would be well to consider whether in the future Chiefs of the Staff should take Napoleon or Moltke as their models in this respect.

The successes of the Prussians in 1866 and 1870 were so vast and so tremendous in their political consequences that for years critics were afraid even to suggest that the Prussians could have committed any great mistakes, and a school arose both in Germany and abroad which preached that every action of the Headquarter Staff in the War of 1870-71 must be considered as a model for the future. This school taught that it could not be the business of the Commander-in-Chief personally to make reconnaissances; that he had other instruments for that work. His business was to sift the wheat from the chaff when the reconnaissance reports reached him.

This school is a fit representative of one of the crazes of the spirit of the times, which has already wrought havoc enough. The craze we refer to is the desire to formulate a rule to meet all emergencies, which thinks more of creating an impression on the reader by stating things crisply and concisely than in stating them in a manner which may prove instructive. A matter of such importance as the personal

conduct of a Commander cannot be settled by a simple yes or no. If a Chief receives information bearing on the strategy of the campaign, he would undoubtedly not make a personal reconnaissance. In the case which we are specially considering, on the 17th August, 1870, touch had been established with the enemy by the battles of the 14th and 16th August. It was possible to observe the greater part of the enemy's movements for hours with the naked eye, and follow them to their completion. Uncertainty still prevailed as to whether the full forces of the enemy purposed remaining near Metz, or only a portion of the same. Under the above conditions it certainly does appear that the Commander-in-Chief or his Chief Staff Officer should personally reconnoitre.

The Germans might have ascertained without any difficulty by 6 P.M. that their opponents had no intention of running away from them. The reports that would have come in would have led to the conclusion that the French were awaiting their opponents' attack in a prepared position. The days in August being longer than they are in October, the Germans had better means of finding out what the enemy was doing than Napoleon had at Jena. Their facilities for making all the necessary arrangements were also greater. Gravelotte—St. Privat was a prepared position. Under these circumstances the Commander-in-Chief or his representative should personally conduct a reconnaissance, no matter how good the information he receives may be. The subject must be considered without reference to the age of any individual. In dealing with military science neither the age of a Radetzky, Alexander, Cæsar, nor Napoleon can be considered. Unless a General intends resigning all direction of a battle, he must personally reconnoitre the enemy, as Napoleon did before Jena. The wonderful magicians of the present day think they have solved the matter by stating that now-a-days a leader of armies should only be a strategist even in action. A leader always was a strategist, even during an action, otherwise he would be no leader. If, however, he does not intend the results of his strategical work slipping through his fingers, he will prefer conducting the battle as well. The leadership during the battles of Gravelotte and St. Privat would have been better had the reconnaissances been properly made. Until the 18th August all the previous actions had been improvised; on the above date the Germans were at last in a position to fight a prepared battle, and had more time to make all their arrangements than is usually the case. Yet fate willed it that under Moltke's very eyes the "curse" of improvised fights and the very thing that Moltke hated, namely, difficulty of leadership or absolute want of leadership, should occur. We must, however, bear this great fact in mind: Moltke succeeded in massing nine army corps and six cavalry divisions at the right time, so that, if necessary, they might all have been brought into the fighting line, and in the strategically decisive direction. That is the greatest material and strategical feat that has ever been performed, and had Moltke been Commander-in-Chief instead of being Chief of the Staff he would have conducted the second portion of the task, the direction of the battle, with equal skill.

We should now have had a model of how to form troops up for attack with an inverted front, and from this formation we should have seen a prepared attack made not only against a prepared position, but also against a naturally exceptionally strong one.

It will be noticed that in the Orders of the 17th the 1st Army as such is not mentioned. This annoyed General von Steinmetz, more particularly as the VIIth and VIIIth Corps received distinct instructions, while no reasons for such conduct was given in the order. Hoenig states that on receiving this order Steinmetz was furious. He considered the treatment that he, as Commander of an Army, had received was most inconsiderate. If the Commanders of an army were going to be ignored they were unnecessary. Out of his army only one corps remained at his disposal; the 1st was removed from his direct influence, the VIIIth entirely so. Two Commanding General Officers were not required for the VIIth Corps; he no longer commanded an army, he was a useless cipher!

General von Steinmetz was one of those Generals who when they receive a certain command assume the rights of proprietorship over it. But should any portion of the same be taken away from them for however short a time, they feel offended.

General von Steinmetz would appear to have been an awkward man to deal with. In the "Twenty-four Hours," Hoenig does not enlarge any further on Steinmetz's personal characteristics, but in the pamphlet of "The Royal Headquarters and Army Headquarters" he has, owing to the action of his critics, drawn the veil further apart. We are informed that the relations between General von Steinmetz and Prince Frederick Charles were so strained that it was considered better that they should not meet each other. The relations between Moltke and Steinmetz on the one hand, and between Moltke and Prince Frederick Charles on the other, were also very little better. It was probably on that account that the three Generals mentioned did not meet each other on the 17th. Had they met, many mistakes, mainly of omission, might have been rectified. The relations between General von Steinmetz and General von Goeben would not appear to be of the best, if the following anecdote, related in the pamphlet, be correct. During the battle of Gravelotte, Steinmetz sent Goeben an order to send the 32nd Brigade into action. Perceiving the order was not executed at once, Steinmetz rode up to Goeben, who had dismounted, and said, "Did your Excellency not receive my order?" Goeben replied, "Yes, I received it." Whereupon Steinmetz said, "Does your Excellency intend to carry it out or not?" Goeben answered, "I was considering, your Excellency, whether it was advisable at this period to let my last available troops out of my hand, more especially in the direction named." Steinmetz said, "Your Excellency, I order you to do so." This closed the conversation. Considering that both Officers were of equal rank, and that it was at least very doubtful whether Von Goeben was under Von Steinmetz's orders at that period, the stiffness with which these two Officers addressed each other is peculiar.

The ostensible reason given for Steinmetz's anger is that he was

indignant at any of his subordinates receiving orders direct from the Chief of the Staff, and Hoenig, in discussing the particular order in question, raises a curious point. The VIIth Corps was known to be scattered; the greater part of the corps was pent up in two valleys, separated from each other by large woods difficult to traverse. The VIIIth Corps was near Gorze, $4\frac{1}{2}$ miles west of the 14th Division, separated from it by a difficult woodland country, and withdrawn from the command of Von Steinmetz. A disaster might easily have happened to the VIIth Corps before it received support from that quarter, neither could Von Steinmetz claim that support.

In tactics, as well as in strategy, situations must arise which cannot be dealt with according to book, situations in which certain risks must be run, and which one must pull through somehow. In fact, one must trust to luck. The position in which the VIIth Corps found itself was one of these. It was bad enough that one corps should be thus unfavourably situated, but the greater the number of troops that were brought into this position the worse the situation became. Doubtless a man of Moltke's genius felt this, and that was probably the reason why the VIIIth Corps was removed from Steinmetz's command at this critical period, and Steinmetz probably knew it. One can well understand that his feeling of irritation towards Moltke reached its culminating point at about 4 P.M. on the afternoon of the 17th.

Steinmetz, feeling that the VIIth Corps was in a critical position, and that he had no troops to support it, sent a report to Pont-à-Mousson to that effect. This report reached the Royal Headquarters during the night, after Moltke had retired to rest. Here is another proof of the great delays which may arise when Headquarters are at a distance. Moltke's reply was sent from Pont-à-Mousson at 4 A.M. on the 17th, and was: "The VIIth Army Corps has at first to observe a defensive attitude. The connection with the VIIIth Army Corps can only be sought to the front. *Should it happen that the hostile army throws itself into Metz, a wheel to the right will take place on our side.* The 1st Army, if necessary, will be supported from the second line of the IInd Army."

This answer of Moltke's is of some historical importance, as it is the first intimation of Moltke's plan, namely, to bring about the surrender of the Army and of the fortress. It is true the enemy had not thrown himself into Metz—that occurred after the battle—but he was found in a position which rendered the wheel to the right necessary. It is further worthy of note, that the instructions in no way bound the VIIth Corps to the defensive, but only to a defensive attitude, and that only at first. The mention of a possible necessary support also implies that Moltke did not consider that the further action of the VIIth Corps was to be defensive. The defensive attitude in fact applies to duties of the VIIth Corps while it was forming the pivot during the wheel, and was not intended to apply to the battle itself.

General von Steinmetz appeared to fear an attack by the French, either from the valley of the Moselle, or from Gravelotte; in the first

case the German communications would be cut, but the armies themselves would not be encountered; in the second case they would have been struck straight in the right flank. However, the first was improbable, and the second equally so, otherwise the French would not voluntarily have evacuated Gravelotte. General von Steinmetz was aware of this fact, and it was as easy then to conclude that no attack would be made against the German right as it is now.

At 8 A.M. on the 18th August, the impression at the Royal Headquarters was that the main forces of the enemy had retired on Metz, and that they reached as far north as Amanvillers. The IInd Army was consequently directed not to extend so far to the left. At that hour the Royal Headquarters were at Flavigny, the headquarters of the IInd Army at Vionville, those of the Ist on the way to Gravelotte. None of the three were where they should have been. The Royal Headquarters should have been on their way to the high ground near Verneville; those of the IInd Army at Caulre Farm; and those of the Ist at Gravelotte.

At 9.30 A.M. they were still in ignorance at Flavigny of the enemy's movements; the impression then prevailing was that the enemy was moving on Briey. It would appear that it was considered impossible to get positive information on that point, although the right wing of the French had for the last twenty-four hours been within 5 miles of Caulre Farm, and there were four German cavalry divisions available.

At about 10 A.M. the Headquarter Staff had a third opinion as to the enemy's intentions, and though nothing new had apparently been discovered, but only a fresh report about the enemy's positions near the Bois de Vaux, which conveyed no fresh intelligence, the orders for the battle were issued at 10.30 A.M. Their influence on the fight in the Mance ravine is so considerable that they are reproduced:—

"From reports received it may be assumed that the enemy intends to maintain his position between Point-du-Jour and Montigny-la-Grange. Four French battalions have moved into the Bois des Genivaux.

"His Majesty is of opinion that it will be desirable to move off the XIIth and the Guard Corps in the direction of Batilly, so as in the event of the enemy retreating on Briey, to meet him at Ste. Marie-aux-Chênes, or, in the event of his remaining on the height, to attack him from Amanvillers. The attack should take place simultaneously, by the Ist Army from the Bois de Vaux and Gravelotte; by the IXth Corps against the Bois des Genivaux and Verneville; by the left wing of the IInd Army from the north.

(Signed) "VON MOLTKE."

One will notice in these orders that the Headquarters were, even then, in a state of uncertainty as to whether the enemy was on the march or not. This is one of the extraordinary incidents that will happen in war.

Before the orders of 10.30 A.M. reached the IInd Army, Prince

Frederick Charles had, at 10 A.M., directed the IXth Corps to march on Verneville and La Folie, and, "in the event of the enemy's right wing being in position there, to open the attack in the first place with the deployment of a large force of artillery" (p. 17, vol. ii).

These instructions were unfortunate, for they exposed the IXth Corps to the risk of making an isolated attack, and, as matters actually occurred, nullified Moltke's intention of making a combined one.

Prince Frederick Charles recognized his error, and at 11.30 A.M. he sent fresh instructions to the IXth Corps to delay the attack. It was, however, too late. A point that will strike one in connection with these instructions issued by Prince Frederick Charles is that, although both the Ist and IInd Armies had not discovered the French right flank in twenty-four hours, it seems to have been considered quite as a matter of course that the IXth Corps should come upon it. Why it should do so is not so obvious.

How was it that, even as late as 9.30 A.M., both the Royal Headquarter Staff and Army Headquarter Staffs believed that the French were on the march? What object would the French have had in so doing? Their object would have been to get away from the Germans *as quickly as possible*. Since the morning of the 17th, the Germans knew that their opponents were on the move. The distance from Gravelotte to Auboué is $7\frac{1}{2}$ miles, to Conflans $9\frac{1}{2}$ miles. Had the enemy been marching since the morning of the 17th, with even only moderate marching capacity, the whole army would have crossed the Orne by 9.30 A.M. on the 18th. How was it, then, that, at that hour, the Germans thought the French were moving away from their position at Point-du-Jour and Leipsic, since, at 9 A.M., Colonel von Loë had reported that there were $1\frac{1}{2}$ to 2 Army Corps in that position (p. 13, vol. ii)?

If, on the 17th, the Germans believed the French were marching away from them, their error in not watching their enemy was increased. It was most improbable that, on the morning of the 18th, the French should be moving away to the Orne. By that time they must either have accomplished the march, or be close at hand. The former was uncertain; but the French position at Leipsic and Point-du-Jour was an obvious indication that they had adopted the latter alternative.

If, however, the Royal Headquarters were in any state of uncertainty on the matter up to 9.30 A.M., why did they not, on their arrival at Flavigny at 6 A.M., cause the necessary reconnaissances to be made? This flank march of the IInd Army, with the Guard and XIIth Corps crossing each other, and the Cavalry Divisions in rear, within 5 miles of the enemy, is one of the most extraordinary incidents in military history. What would have been the consequences had a hostile General struck this mass, say at 8 A.M., while the manœuvres of the Guard and XIIth Corps were in full swing?

Undoubtedly the attention of the IInd Army was concentrated rather towards the north than towards the east; but, considering the assumption under which the march was made, a reconnaissance in an

easterly direction was as necessary as one in a northerly, and the first Officer (Lientenant Scholl, p. 18, vol. ii) who rode a little distance away from the troops towards the north-east, discovered at once, without the least difficulty, the French position at St. Privat.

How does the official account describe these events?

Ground which is easily observable is described as the reverse; the crossing of the Guard with the XIIth Corps which delayed the former three hours, is justified and explained as being intentional.

The backward position of the 5th and 6th Cavalry Divisions is attributed to the difficulties of water supply. Not a word about the omissions in respect of reconnaissances or leadership on the part of the Commander of the army. Everything would appear to have fitted in nicely and smoothly, and the greatest skill seems to have been employed in painting white black and black white. This has been done so well that many a reader is successfully deceived.

It will be noticed that, though the orders of 10.30 A.M. still display some uncertainty concerning the position and intention of the enemy, they differ materially in one respect from the orders of the previous day issued at 2 P.M. In the latter, the main direction is a northerly one, with a possible move eastwards; in the former, the direction of the march is reversed. The extraordinary thing about the matter is that, although such a radical change was made in the last issued orders, no additional information had come to hand to cause it.

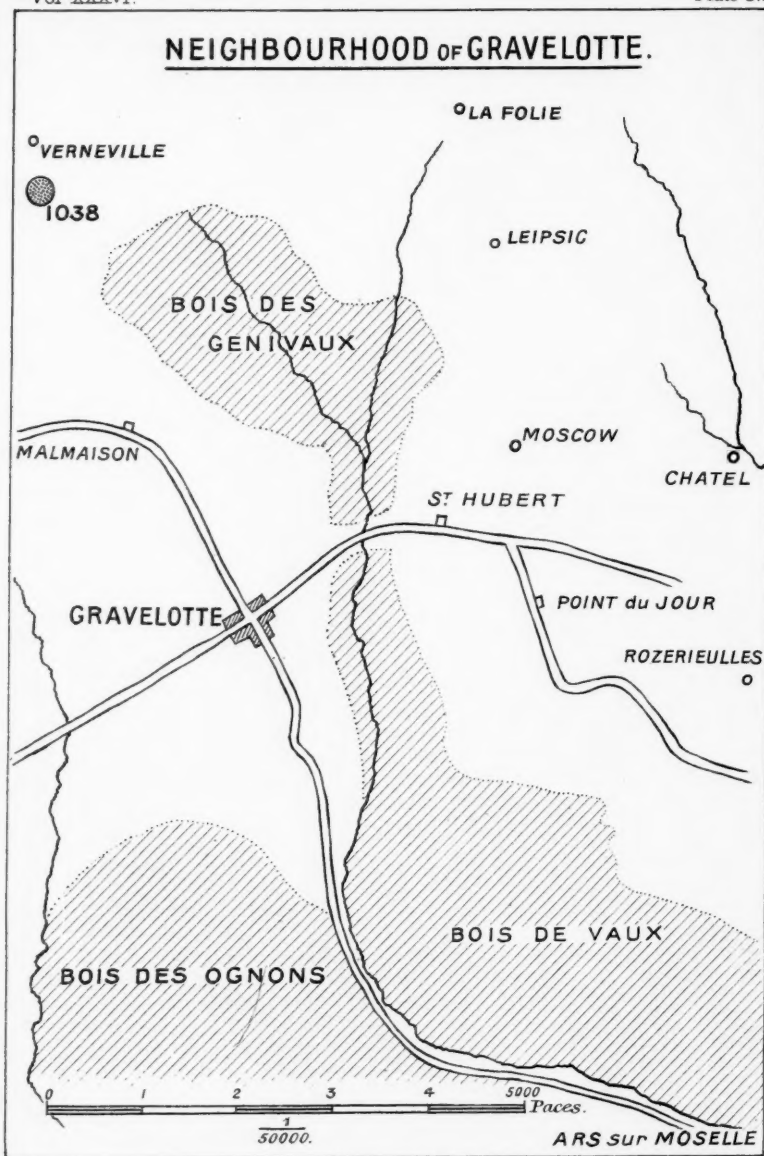
When we examine the contents of these orders and consider that the reasons for their issue were based on scanty and contradictory reports, without any verbal interchange of impressions on the part of the Commanders of the 1st and IInd Armies, who were close on the spot, we must come to the conclusion that they might equally well have been issued from Pont-à-Mousson, or any other place, instead of from Flavigny. The Headquarter Staff was put to great physical exertions to reach Flavigny on the 17th. Their reasons for so doing were that they expected the fight to be renewed under favourable conditions on that date. This was, however, delayed for twenty-four hours, and in the meantime the ground should have been cleared up to ensure the conditions being favourable when the fight was renewed. This did not occur; the three Staffs, the Headquarter and both Army Staffs, quitted their forward positions at the very period when they should have remained there; and, after a lapse of close upon twenty-four hours, the orders for battle were issued, with but slightly increased knowledge from that which was at hand on the 17th.

We notice both an extraordinary waste of physical power and at the same time an absolute omission to make proper use of the means that were at hand. The works were not working smoothly.

The Headquarter Staff left Pont-à-Mousson in order to be near the front, in a better position to know how matters stood; however, they found out nothing more than might have been heard at Pont-à-Mousson, and they made no particular attempt to do so.

As the three Staffs already mentioned were within a small area of ground, for a matter of eight hours, one might have thought that the

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Army Commanders and the King, or his Chief of the Staff, would naturally have had some verbal communications with each other. We know how, in other cases, notably the Waterloo campaign, the great exertions Commanders of armies have made to ensure having a personal interview. Here, though almost touching each other, all communications were sent by Orderly or Staff Officers.

The orders for the 17th had barely been issued from Flavigny, when further written communications were continued between Ars and Pont-à-Mousson, and *vice versâ*, simply because all personal interviews had been avoided. These written communications, instead of ensuring a mutual understanding, only increase the already existing frictions. A personal interview might have explained everything, to the mutual satisfaction of all concerned, and saved a vast amount of the trouble which occurred later.

More might be said, but the above appears sufficient to show that the works were not running as smoothly as is desirable in such a crisis as we have been discussing.

It will be noticed that the orders of the 18th speak of a simultaneous attack on the part of the 1st and IInd Armies.

To make a simultaneous attack against a position, two conditions are necessary: the extent of the position must be accurately known, and the attacker must, at all points of his attack, be equally distant from his objective. Should one or other of these conditions not be satisfied, a simultaneous attack is impossible. The Royal Headquarters were aware that the conditions were not so satisfied. They knew from the reports that reached them, about 10.30 A.M., that the IInd Army was somewhere on the line Caulre Farm—Jarny, that the Guard Corps was considerably in rear of this line, neither ready to, nor capable of, wheeling in any direction. But even if the necessary conditions had been satisfied, a simultaneous attack would have been impossible. When a position extends over a distance of 6 miles, a simultaneous attack against it cannot be made, except in theory. Napoleon's practice in such cases was to worry the enemy along the whole front with his light troops, and make the enemy show his dispositions. When this had occurred, the assaulting troops, who were ready formed up, made the real attack. In future we shall see that this will be the course of action against all prepared positions; and that is why Captain Hoenig lays so much stress upon this identical point.

The main points brought out by Captain Hoenig in the first part of his book, dealing with the strategy of the 17th and 18th August, have been placed before our readers. We will now discuss the second portion of his book, and the second pamphlet, which deal with the tactics on the German right during the battle of Gravelotte.

In the second part of his work Captain Hoenig gives a lengthy and detailed description of the French position. There is nothing in it calling for special notice, excepting that he reminds us that the majority of troops defending the position from Rozerieulles to Moscow, about 2 miles in extent, were troops who had fought at Spicheren and at Vionville, and that three German army corps tried

unsuccessfully to turn them out of it. The French had about 23,000 rifles and 90 guns on the front named. The Germans had 44,000 rifles and 190 guns available. He then discusses the causes for this failure.

He contradicts, on the authority of reliable eye-witnesses, whom, however, he does not mention, the statement in the official account, that the French had covered communications between the main and the advanced position, as well as the statement that Point-du-Jour and Moscow had been converted into small forts (p. 7, vol. ii). The French had contented themselves with loopholing the walls and with constructing shelter trenches on each side of the buildings in question. We are further informed that the undergrowth in the woodlands of the Mance ravine did not render it impossible to keep the infantry in hand; it would only have made it more difficult. Where a man can find standing room, infantry can march. Jackson and Lee might have taught the Germans that such was the case.

From the German point of view there was a great lack of communications from the rear to the front, in the Mance ravine. These are an absolute necessity, when a serious attack is intended; and we know from Moltke's orders, issued at 10.30 A.M., that the 1st Army was intended to attack from the Bois de Vaux and Gravelotte.

On the eve of the battle of Jena, Napoleon, finding there were not sufficient means to bring his artillery up to the front, had a road made for the purpose. The Germans had ample opportunity of cutting two openings in the wood, north and south of the main road, on the west side of the ravine. After St. Hubert had been captured, this work could have been continued up the eastern slope to the far edge of the wood. It might have been completed by 4.30 P.M. Only when that work was completed were the necessary conditions satisfied to enable the troops and their supports to be formed up and deployed for attack. Had the ravine been crossed by three different roads, the French would have been compelled to disseminate their fire, and we may well believe that the failure of the Germans on that part of the field was mainly due to the fact that their opponents were able to concentrate all their fire on the main road, and, thereby, shatter the heads of the German columns as they attempted to deploy after crossing the defile.

One of the theories of an attack in these days is, that the artillery of the offensive, after subduing the defender's artillery, should direct its fire on the defender's infantry, and only when the infantry are shaken, the attacker's infantry should proceed and complete the work.

Probably the reason that this theory has met with such general acceptance is that the majority of English military writers are gunners, or their brethren of the other scientific corps.

Infantry, combined with artillery, must, however, invariably prepare the attack. Undoubtedly artillery has made great advances within the last twenty-two years; but we must remember that in future campaigns no artillery is likely to be so hopelessly overpowered as the French artillery were at Gravelotte. Yet, on the 18th August,

1870, 132 German guns, concentrated on a front of 2,200 yards, were unable, after a fire that lasted seven hours, to shake the hostile infantry.

If it be urged that at St. Privat the German guns met with a success that they did not meet with on the right flank, we would reply that it was not the artillery that drove Marshal Canrobert out of St. Privat, but the empty pouches of his men. Good infantry can only be shaken by a combination of artillery and infantry fire. At Gravelotte the Germans did not take adequate steps to ensure this combined action between the two arms; had they done so, it is possible, nay, probable, that even their frontal attack against Point-du-Jour would have succeeded.

It may be contended that the inferiority of the German infantry weapon to that of the French rendered it impossible for the Germans to attempt to prepare the attack by infantry fire. If, as we will remind our readers, two batteries, exposed to a cross-fire of artillery and infantry, within a range of 800 yards, were able to remain in action for hours (we refer to the two German batteries near St. Hubert), if one cavalry regiment (4th Lancers) remained about half an hour exposed to the same fire, and the 9th Hussars for even a longer period of time, surely one was not asking too much of infantry in expecting them to throw up shelter trenches at about the same range. We would lay stress on that point, for in future campaigns circumstances will arise which will render such a course necessary, in order to ensure an effective position for the preparatory infantry fire. From this position the fire may possibly be maintained for the whole day, and on the following day only will the decisive attack be made. Had the Germans acted in this manner on the 18th August, 1870, it would have been possible for them to have got within 500 yards of the main position of the French, whence the needle gun would have met the Chassepôt on equal terms. There is nothing new in this. Lee's troops made entrenchments miles long under hostile fire. Both for offensive and defensive purposes, a strong infantry position east of the Mance ravine, from whence an effective fire could be poured in against the enemy, was necessary, if the Germans wished to ensure success in that quarter.

The French advanced post of St. Hubert was, it is true, captured with comparative ease. This is due to the fact that the superiority of the German artillery rendered any support to the French infantry in that farm impossible. This is no contradiction to what has been written above, for it is a different thing expecting infantry to advance over perfectly open ground, swept by artillery fire, to support advanced troops, and calling on them to hold the main defensive position, where they are sheltered either naturally or artificially. That the forty-three companies were able to hold on at St. Hubert for some hours is due to the fact that the French artillery were unable to come into action against the place. For when artillery has ranged itself, a farm building surrounded by stone walls is about the worst place troops can be in.

Having pointed out, generally, the points in the German tactics to

which Captain Hoenig takes exception, we will examine, somewhat in detail, the course of action pursued. Before proceeding we must again refer to the personal relations between General von Steinmetz and General von Goeben. It is instructive in this way: It is a notorious fact that, in the French Army, the personal jealousies between the different Generals led to their doing nothing to assist each other. In the German Army, though the relations between several of the Generals were greatly strained, the sense of duty was too strong to cause such a fact to prevent their doing what they knew to be right, though, as we have seen, indirectly, this want of harmony was not without its influence on the course of the campaign.

We know from the official account (p. 70, vol. ii) that before proceeding to attack St. Hubert the VIIIth Army Corps formed up under cover of a hollow north of the main road and west of Gravelotte. In Captain Hoenig's pamphlet on the fighting near the quarries we are informed that, while the troops were resting in this hollow, General von Goeben's Chief of the Staff informed the General Officers Commanding the two divisions of the corps that it was General Steinmetz's intention that the VIIIth Corps should capture the wood lying in its front, occupy it, and maintain itself on its eastern edge. The 29th Brigade would attack south of the main road, the 30th north of the same. After capturing these positions, both brigades were to secure the exit from the main road. The VIIth Army Corps would connect with the 29th Brigade, prolonging the line to the right. After this, General von Steinmetz purposed sending the combined artillery and cavalry of the 1st Army over the Mance ravine. The artillery would engage the enemy at close ranges, while the cavalry was to maintain a constant series of attacks on the shattered foe. The General Officers Commanding the VIIth and VIIIth Corps were to decide as to the actual moment the artillery should cross the ravine. That was the general outline of General von Steinmetz's plan. It could hardly fail if the German infantry held its ground on the eastern edge of the woodland and covered the artillery as it came into action as intended; this would naturally take place with as little delay as possible.

General von Steinmetz was of opinion that the enemy would be unable to resist this artillery fire, but would retire. This would give the cavalry their opportunity.

The Generals to whom this plan was communicated suggested that, in the event of St. Hubert being occupied, it would be necessary to capture it before the artillery advanced, and, even when the capture had been effected, the artillery, in column of route on one road, would be under hostile fire both while in the defile and afterwards while coming into action. General von Steinmetz hoped, however, that by rushing the artillery over he would be able to execute his plan.

We know from the official account that the Commander of the 1st Army held on to the above idea throughout the whole action, the orders given at about 3.15 P.M. for the cavalry and artillery to advance over the ravine were issued in accordance with the intentions mentioned above.

It would appear that this plan was not communicated to Officers

commanding regiments, for none of them knew exactly what was wanted of them.

The question naturally suggests itself, Why did General von Goeben, who habitually communicated personally to his subordinates the tasks they were intended to do, refrain on this occasion from acting as usual? It would appear to be due to the friction that is apt to occur between Generals in war. General von Goeben, not being at that period under General von Steinmetz's command, may have considered these special instructions in the light of an unauthorized interference with his own command. Knowing the man with whom he had to deal, Von Goeben did not choose to have a personal discussion with Steinmetz on the subject. He did not, however, oppose his Chief of the Staff repeating what had been communicated by the Chief of the Staff of the 1st Army. Though not directly under Steinmetz's command, Goeben did not care to oppose Steinmetz's plan, but, as he did not communicate them personally to his subordinates, Captain Hoenig infers that his reason for not doing so is because he considered his plan impracticable. Under the circumstances, General von Goeben should have seen the Commander of the 1st Army and have informed him both of his doubts as to the soundness of the proposed plan, and have reminded him that the VIIIth Corps was under the orders of the Commander of the IInd Army. General von Goeben probably thought that he would trust to luck, and if the worst came to the worst, and his artillery was ordered across the ravine, it would be time enough then to express his doubts regarding the practicability of the scheme.

In the meanwhile he would not oppose the infantry of the 15th Division being employed as Steinmetz wished.

Be that as it may, Goeben at no period of the battle made the least attempt to send any of his artillery over the Mance ravine, and it is very doubtful whether he ever received a direct order, as the Commanders of the VIIth Corps and 3rd Division did, to send their artillery across.

In the account given of the transaction in the Prussian official, we can only infer that General von Zastrow received orders to send his artillery across the ravine, for it is not stated in as many words that he received orders to do so (p. 93, vol. ii). Neither do we find any mention of General von Hartman receiving similar orders.

Captain Hoenig raises an interesting point about the Gravelotte—Point-du-Jour road.

The road in question formed such an important tactical feature in the fight that it was of the utmost importance to specify clearly before the action whether it fell solely to the VIIIth Corps, or whether General von Steinmetz proposed sending other large bodies of troops to the front along it. This circumstance alone should have led to General von Goeben seeking a personal interview with the Commander of the 1st Army. As matters actually stood, both Goeben and Steinmetz had a perfect right to use the road in question, Goeben owing to the position his corps occupied, and Steinmetz in consequence of Moltke's orders that morning.

Unless some agreement was arrived at on that point, misunderstandings and confusion must inevitably result. General von Goeben was a very "level-headed" man, and it throws a peculiar light on the relationships between the two Generals in question, when the junior declined taking any steps to make matters work somewhat smoothly.

The four batteries of the 14th Division came into action at about 12.30 P.M., on the high ground south of Gravelotte, and were reinforced by three of the 13th Division, at about 1.15 P.M. After a short period of time, the German guns established their superiority over their opponents; several limbers and wagons belong to the latter were seen to explode. On the 17th the Officer commanding the divisional artillery had reconnoitred and chosen the position his batteries occupied on the following day. He knew the distance to Point-du-Jour, and his guns were consequently able to range themselves very rapidly; it is mainly due to this fact that the Germans were able to establish their superiority in such a short space of time. As there was ample room for the three batteries of the 13th Division to come into action together, it must be considered that a tactical error was committed in permitting these latter to come into action on both flanks of the guns of the 14th. As this artillery line was being formed, i.e., shortly after 1 P.M., Von Steinmetz received Moltke's instructions, which had been sent off from Flavigny at noon, directing that at first only the artillery should engage. The messenger had taken over an hour to do less than 4 miles.

The infantry of the VIIth Corps notoriously accomplished very little at the battle of Gravelotte. When we examine the aimless way in which brigades and even regiments were split up, it will assist us in understanding how it was that so little was done on the German right flank.

The 26th Brigade was complete and stood near Ars; the 27th Brigade was massed south-west of Gravelotte. The 25th Brigade consisted of the 13th and 73rd Regiments, the 28th of the 53rd and 77th.

The 1st and IIInd battalions 53rd were on the northern edge of the Bois de Vaux, fronting towards the quarries of Rozerieulles, the 7th Jaeger, the divisional battalion of the 13th Division were with them. The III/53rd were on the right of the artillery line. The II/77th were there as well, while the III/77th were with the corps artillery. The I/13th was north of the Mance mill, the IIInd and III/13th somewhere in the Bois de Vaux, supporting the two battalions of the 53rd. The 1st and III/73rd were with the III/53rd and II/77th, the II/73rd at the Mance mill. The front occupied by the VIIth Corps extended over 4 miles. The consequence was that there was no vigour in any of the attacks made by the several portions of that corps.

We find that at Gravelotte the French generally made use of advanced positions, and considering the nature of the ground on the French left and left centre, we are inclined to agree with Captain Hoenig, who defends the action of the French in this respect. The

French main position was a very strong one; both from it and from the advanced positions occupied they were able to conduct a simultaneous fight. Marshal Lebœuf was undoubtedly right in occupying the western edge of the Bois des Genivaux, disputing the occupation of the same with his opponent, and forcing him to an early deployment and expenditure of force and energy in overcoming the resistance offered. The French could retreat through the wood without difficulty, while they had every reason to hope that a German advance through the same would lead to a dissemination of various units.

The account of the advance, as given in the official account, p. 77, is not sufficiently detailed to bring out the points on which Captain Hoenig lays special stress. We purpose giving an account of this advance, as related in the pamphlet on the fighting near the quarries. The 33rd Regiment was in the first line, the 60th in the second. On advancing into the Mance ravine the whole regiment kept south of the main road and proceeded in échelon from the left; the 3rd battalion, whose left reached the main road, leading, followed by the 2nd in its right rear, the 1st being still further in rear on the right of the 2nd. Before long, however, when most of the companies had extended, the 3rd and 4th companies got in between the 2nd and 3rd battalions and remained there for some time. By the time the foot of the ravine, which was dead ground, had been reached companies and sections had got hopelessly mixed, for under cover of the dead ground order was restored *as far as possible*, and the packs were taken off. In the further advance up the eastern slopes the extension of the regiment must have been very considerable, for it occupied a front of 1,400 yards. Even under favourable circumstances this extension would have rendered any combined movement a matter of great difficulty, and one can well imagine that the wooded country, combined with the steep ascent out of the ravine, led to the regiment being frittered away in a series of independent fights by companies and sections, which barely maintained any tactical cohesion, and were absolutely unaware of what the men in their own regiment and in their immediate neighbourhood were doing.

As the various companies reached the eastern edge of the wood they saw in front of them a perfectly open slope, the crest of which appeared lined with shelter trenches. The distance these trenches were from the wood would appear to be about 880 yards. A fortified group of houses (Point-du-Jour) was also noticed, while away to the left a large farmhouse (St. Hubert) appeared artificially fortified. With the exception of the troops at St. Hubert there were no troops in advance of the crest line, so that on this portion of the battle-field, least, there were not any tiers of fire.

As no objective had been specified, these companies were in a most unfavourable position, none of their Commanders knowing what they were intended to do.

The attack of the 30th Brigade was made on, and north of the main road.

Two companies of the III/67th were on the road and one south of it to connect with the 33rd Regiment. The II/67th had two com-

panies in columns of half sections on the road, two extended on the left, the 8th Jaeger prolonged the line to the left, and the 28th extended still further to the left. This latter regiment was in two lines, the flank companies of battalions forming the second line. They were in column of half battalions. The 12/67th was on the extreme left. The 30th Brigade on the left and the 33rd Regiment (29th Brigade) on the right reached the eastern edge of the woods at about 2.15 p.m. The former brigade occupied a front of about 1,100 yards.

By the time it had reached the edge of the wood, the order of several of the companies had changed considerably.

The 3rd and 4/67th, originally north of the road and on the left rear of the III/67th, were now in a hollow 250 yards to the right front of the above-mentioned battalion.

The advance of the artillery to the position east of Mogador was made at about the same time (2.15 p.m.) Their fire was so efficacious that by about 3 p.m. the hostile artillery was totally silenced, and the Germans were able to turn their guns on the infantry manning the shelter trenches. Even if the effect of the fire could not be clearly seen, it might be inferred that it would be a matter of some hours before the French infantry were thoroughly shaken, and under those circumstances it was necessary that steps should be taken to ensure the guns having a sufficient supply of ammunition.

Unfortunately this was not done, and the Germans had at times to cease firing, and it is but too probable that this constrained inactivity on the part of the guns occurred at some of the most critical periods of the fight.

The III and I/28th would appear to have been the first to attempt to make a further advance north of the main road. Starting from the edge of the wood, the battalions made an advance over the open slope against the Moscow heights in company columns. The enemy's fire soon drove them back. The fire had scattered the men of the various companies in every direction, and it was with difficulty that various small groups could be collected together and induced to hold on to the eastern edge of the wood. A portion of the men sought refuge in the hollow of the ravine, either under the pretence of being wounded or of carrying wounded men to the rear.

To return to the 33rd Regiment. South of the road the III/33rd and 3 and 4/33rd worked off to the left, probably under cover of the hill towards St. Hubert, leaving a gap of over 700 yards between themselves and the remainder of the regiment on the right. A portion of the 5/33rd and 8/33rd occupied the gravel pits about half a mile south of St. Hubert, while the 6th and 7th companies proceeded to attack Point-du-Jour. The 1st and 2nd companies occupied the western extremity of the big quarry without opposition. The 6 and 7/33rd advanced by rushes to within about 350 yards of Point-du-Jour, but their losses were so severe that they fell back, and, once under shelter of the wood, nine-tenths of them did not come into action again. (This account differs from the one in the official, p. 89.) General von Goeben noticed from Gravelotte what had

occurred, and sent the other regiment (60th) of the brigade along the main road. By 3 P.M. the gap between the two portions of the 33rd had been filled by the III/60th.

It was about this time that St. Hubert was captured. From the account given in the Prussian official (p. 87) it is possible that a false impression might be conveyed. It is a fact that there were no senior Officers on the spot to conduct and lead the assault, and though the men may have rushed the farmyard of their own account, the impulse was undoubtedly given by the arrival of the 60th. Experience has proved that under conditions similar to those which existed near St. Hubert the approach of support gives an impulse to the firing line, causing it to make another effort to accomplish the task originally allotted to it, before the fresh supports have had an opportunity of getting merged in the firing line. This is what occurred at St. Hubert.

The number of companies of the 60th that gave the original firing line the impulse that carried St. Hubert amounted to ten. Captain Hoenig is of opinion that one company properly directed might have been sufficient. That may be. It is, however, his view as to what constitutes a properly led company in a charge that we propose giving. He states that the men must be kept well in hand, Officers in front, on the flanks, and *in rear*. Probably experience has taught the Germans that Officers under certain circumstances must drive as well as lead their men.

Our readers will remember that in the orders issued by Von Moltke the attack was to take place from the Bois de Vaux as well as from Gravelotte. We will now consider what steps were taken to fulfil this order. At 3 P.M. orders were sent to the 26th Brigade to advance from Ars against Vaux and Jussy. The official account (p. 86) dismisses the action of the infantry of the VIIth Corps with a few words, so we must look to other sources to discover how much or how little they did. The aimless manner in which two of the brigades, forming each a portion of different divisions of the VIIth Corps, were distributed has already been mentioned. In consequence of this, none of the units composing these brigades knew what was wanted of them. The least that might have been done, more especially as the 16th Division was acting as a reserve at Gravelotte with the IInd Army Corps not far in rear, would have been to have got the 25th and 28th brigades together, and then some decision might have been arrived at as to their future action.

The instructions which were sent at 12 noon to Von Steinmetz, directing him only to bring his artillery into action at first, did not cancel the orders of 10.30 A.M.; they only delayed their execution. Von Steinmetz should have given orders to the Commander of the VIIth Corps to make the needful preparations to conduct an attack in support of the 15th Division, from the Bois de Vaux. Instead of being near Gravelotte throughout the action, General von Zastrow should have been opposite the Rozerieulles quarries, near the eastern edge of the wood, by 3.30 P.M. Had such been the case he would have been informed of the first capture of the quarries by the 33rd,

which took place at about 3.33 P.M., whereas, as matters stood, he remained ignorant of either the first or second capture of the same.

If troops are fighting in a wooded country, separated from their Chief by a ravine, and over 2,000 yards away from him, it is the business of the latter to ensure that communication is kept up between him and the troops in front. This did not occur, and, with the exception of the 26th Brigade, the whole of the infantry of the VIIIth Corps was wasted, and this under the eyes of Steinmetz and of Zastrow. By 2.30 P.M. the troops might have been massed near the Mance mill, the left of the I and II/53rd and 7th Jaegers been reinforced, and the quarries attacked from this position, which was far from unfavourable. With the quarries captured and held in strength, the battle was decided on that flank. This was perfectly feasible, for the weak detachment of the 33rd remained in possession of their south-western extremity for about three-quarters of an hour, in fact, till after 4 P.M. This would have been the right course to have pursued, and it would have been in accordance with the spirit of Von Moltke's morning orders. The infantry were almost wasted; the greater portion of it acted as escort to the artillery. An artillery line like the one the Germans had near Gravelotte can protect itself, more especially if it has mastered the hostile artillery. Nothing of any consequence occurred on the German right, and as a result the French were able to bring nearly all their forces near Point-du-Jour against the 15th Division.

Captain Hoenig brings a very strong indictment against General von Steinmetz, whether justifiable or not we are unable to say. We reproduce it, however, for it is interesting as a study on the influence manner and temper on the part of people in a responsible position may have on their subordinates. After mentioning the perfect calmness of Von Goeben, who dismounted to ease his horse and remained perfectly still, we are told that the expression on Von Steinmetz's face showed that he was in a violent temper. It is true he spoke but little, but he walked his horse up and down, and when any instructions were given, his manner was gruff and unpleasant. Steinmetz would never receive the advice of anybody; his obstinacy was only equalled by his vanity. There was no harmony between him and the members of his Staff; they did not work with pleasure for him, and the military absolutism to which they were subjected acted as a dead weight on the best of them.

To return to the situation of affairs with the 15th Division at about 3.30 P.M. At this hour this division appeared like a wedge jutting out from the general line of battle, about 400 yards from the main position of the French, and exposed to a continuous frontal and flanking fire. It was split up in a series of small groups without fresh supports in rear. At first sight it may appear incomprehensible that the numerically superior enemy did not drive the whole division back into the ravine and recapture St. Hubert. We shall not be far wrong, however, in attributing the holding power this division possessed to the vast superiority of the German artillery.

From about 1 P.M. to 3.30 P.M. the 15th Division fought with about

10,000 rifles against 16,000 belonging to the French 2nd and 3rd Corps, but they were supported by 156 guns against 90. Of these 10,000, not more than 6,000 rifles remained in the firing line; 2,000 or so were killed or wounded, and another 2,000 had lost their way in the woodland.

General von Goeben could not tell exactly how this division was actually situated, but his shrewd judgment told him that all its offensive powers were spent.

He could see the Mance ravine, in rear of the division, richly studded with men of all sorts, some with rifles, some without; some wore their headdress, others did not. A few of these men were collected together by some senior Officers; the majority, however, concealed themselves in the woods. The detachments that were collected were sent forward into the fighting line, but, as nearly all of them were without Officers or non-commissioned officers, very few reached it.

This wooded portion of the field concealed a large number of stragglers, who only rejoined their corps on the morning of the 19th. The men came from all parts of Prussia. The 33rd were East Prussians, the 60th Brandenburgers, the 28th Rhinelanders, the 67th Magdeburgers, and the 8th Jaegers, also came from the Rhine; they one and all, however, fell victims to the temptation a wood has for humanity under certain circumstances. From the above fact may we not infer that Officers are as necessary in rear of the fighting lines as in front?

The leadership on the part of the Commanders of the 29th and 30th Brigades was in the main good. The Commanders of both brigades kept themselves in constant communication with their divisional and corps leaders. The tactical success obtained in securing possession of the far edge of the wood is due to the leadership of Brigadiers and Colonels. Whether the move of the II/28th northwards was intentional or not, it is impossible to say, but it was, tactically speaking, a most useful one. This battalion kept up a constant flanking fire against the French, and it is a question whether the remainder of the brigade could have maintained their position without this valuable assistance.

The troops themselves committed the error of crowding together when they should have been extended, namely, at the far end of the defile formed by the main road, opposite St. Hubert. Probably in an enveloping movement it will also be impossible to prevent something similar occurring, but one should always endeavour to prevent it. As a matter of fact, the troops extended at the wrong time, for on entering the woods they were greatly scattered; inside the wood they got together, and reached the far edge in little densely packed groups.

In the main, the various attacks were conducted by companies, which generally managed to work in concert with those on their right and left, in spite of heavy losses. The conduct of the four companies of Jaegers is worthy of note. They were able to maintain within themselves sufficient energy to assault St. Hubert, though they were all absorbed in the firing line, and had no supports near

them. They had prepared the assault by an effective fire, and when in possession of the farm, they remained in it until nightfall. Their losses were not inconsiderable, for they amounted to 12 Officers and 197 men. One fact is of especial interest for us. Although the units composing the 15th Division had only been brought together on mobilization, and, as we have seen, came from all parts of Prussia, no friction or tactical disadvantage seems to have resulted thereby. On the contrary, everything appeared, all things considered, to work smoothly. The III and I/28th seem to have contributed less than any of the others to the success on this part of the field. The ground over which they had to attack was undoubtedly unfavourable for them: their losses were, however, not very great, amounting as they did to 22 Officers and 341 men. The impression conveyed is, that the dissolving influence of the woods rendered it exceedingly difficult for the Officers to keep their men together, and to lead them forward to the attack.

The advances made by the 60th and 28th against the main French position after the capture of St. Hubert would have been better left alone. Single companies could effect little or no good, and absolutely nothing could be expected of them, if the advances were made without an adequate fire preparation. This was not done. It is true that some companies got to within 250 yards of the French, but their opponents' fire was so overwhelming that they were forced to fall back, and were only brought to a stand at the eastern edge of the wood. Advances made in that fashion against an overwhelmingly powerful enemy naturally lead to the troops attempting them being driven back. Experience has shown that it is during the retirement that the heaviest losses are incurred, and the tactical value of the troops reduced.

This independent procedure on the part of individual companies must be prevented, especially when no definite objective for attack has been pointed out, as was the case here. Fortunately for the Germans their opponents contented themselves at that period with a passive defence of their position: should the enemy, however, make a counter-attack at the proper moment, as the French did later on, a panic is the invariable result, and the fighting value of the troops is used up. This is due, not so much to the material losses incurred, as to the moral effect of a successful counter-attack made at the right moment. Though these attacks which were made by companies up till about 3.30 p.m. may be explained, it is difficult to see how similar attacks made right through the day by nearly every regiment engaged near St. Hubert can be excused. The Prussian tactics at that time were obsolete, and the series of errors they committed bear a striking resemblance to the series of attacks made by them against the French at Jena.

They attempted shock tactics without paving the way for the same by an adequate amount of infantry fire; in fact, one might say that no preparation by fire was ever made, for the Germans never got within effective range to do so. Shock tactics can only be expected to succeed when the previous rifle fire has proved effective.

At about 3 P.M., it appeared to General von Goeben that the energy of the 15th Division was exhausted, and that to enable it to maintain the position it had won against a possible counter-attack, it would be necessary to reinforce it; he consequently decided to send a brigade of the 16th Division forward as a support.

At the same time, General von Steinmetz decided in his own mind that the enemy was contemplating a retreat, and issued orders, not for an attack against the hostile position, but for a pursuit. The result to the Germans was disastrous.

It is worthy of note that Steinmetz, Zastrow, and Goeben had exactly the same means of judging the effect the attack of the 15th Division and the artillery fire had had on the French, yet the two former arrived at a diametrically opposite opinion to the one arrived at by the last-named Officer. Steinmetz and Zastrow appeared so confident in the correctness of their conclusions that each one seemed to outbid the other in endeavouring to obtain for themselves the credit of a victory won before the very walls of Metz!

The orders General von Steinmetz issued at 3 P.M. were as follows: "The 1st Cavalry Division will at once pass over to the heights near Point-du-Jour; the regiment forming the advanced guard, supported by the fire of the batteries of the VIIth Corps, which will accompany the division, will, taking the direction of Moscow Farm, throw itself on the enemy, who is in the act of retiring; its attacks will terminate on the glacis of Metz. The other regiments will all act with it." ("History of the 4th Lancers," p. 95.) The other order issued was that the 26th Infantry Brigade was to advance from Ars on Vaux.

Such was General von Steinmetz's idea of a combined frontal and flank attack. Simultaneously with the above orders issued by the Commander of the 1st Army, General von Zastrow ordered the whole of the artillery of the VIIth Corps to take position on the heights on the opposite side of the Mance ravine, south of the main road. To protect this artillery line the 27th Brigade was directed to advance as far as the *western* edge of the wood. Captain Hoenig informs us that the Commander of the artillery of the VIIth Corps could hardly believe his ears when he heard the order. He attempted to point out the inadvisability of such a procedure, but his remarks were cut short by his superior Officer, and he had to submit. Recognizing that some disaster must result if the order were carried out, and deeply imbued with the sense of his responsibility, he had recourse to stratagem. While apparently riding down the line to convey the orders received, his Staff Officers whispered to the Field Officers in charge of divisions that they should manage to do something to make it appear that they could not limber up at once, in order that a few minutes might be gained. These few minutes might save them. It was only a question of creating a slight delay. As a matter of fact this stratagem saved many of the batteries, but not all. The 3rd horse, 3rd light, and 4th light batteries of the VIIth Corps had been unable to find space to come into action; they were consequently ready to move off at once, and any delay was impossible in their case; they started off, and as they were

nearer to the defile than the 1st Cavalry Division, they entered it in front of the cavalry. Let us picture to ourselves how matters stood on this oft-mentioned road to Metz. Wire had been placed across it by the French; the infantry had partially removed the obstacle but not entirely. St. Hubert had just been stormed; the 60th and 33rd had made their unsuccessful onslaughts against Point-du-Jour; hundreds of wounded were trailing back along the road, accompanied by still greater numbers of men who were assisting them. The 29th Regiment, forming part of the 31st Brigade, which Von Goeben had sent as a support of the 15th Division, was also advancing along the road. The infantry were unaware that masses of cavalry and artillery were following them, the cavalry were unaware that the infantry and artillery were both exposed to hostile fire while still in the defile, and all three arms were unaware that a strong stream of men out of action was coming towards them; the troops moving to the front were hurrying on as fast as they could.

On one road, swept by a hostile fire, were found troops belonging to five different commands. The 29th (31st Brigade) immediately alongside the regiments of the 27th Brigade, the 1st Cavalry Division and its battery, also the four batteries already named, there were besides the 9th and 15th Hussars, the former belonging to the VIIIth Corps, the latter to the VIIth. Both these two regiments were working independently, each of them fighting their way to the front as best they could. The 31st Brigade was intended to reinforce, the 1st Cavalry to pursue, the 27th Brigade to form a sort of reserve, the artillery to support the movement. For a military movement to meet with success, three things are necessary: order, simplicity of intentions and clearness in the instructions; not one of the three was to be met with in this case. What a hell that road must have appeared to the crowds massed on it!

Above them a dense cloud of smoke through which columns of fire from the burning farms of Moscow and Point-du-Jour might be seen at intervals; behind them the thunder of 144 guns, and in the ravine itself masses of cavalry, artillery, and infantry, crowding and jostling each other! Those in rear trying to force their way to the front, the advance of those in front getting shorter and shorter under the pressure of the hostile fire. Infantry coming from the front in all sorts of conditions, some wounded, others because their moral had failed them. When we look upon this picture need it surprise us when we hear that later on the men's nerves were unequal to bear the strain imposed upon them, and that the movement ended in a catastrophe?

The orders conveyed to the 1st Cavalry Division should be made "famous." A glance at the map must have informed General von Steinmetz that even had his premises been correct, the cavalry pursuit must have terminated, not on the glaciis of Metz, but in the Chatel Valley. It was a notorious fact that Steinmetz expected that those under his command should do something brilliant; any ordinary action had no longer any charm for him. Now there is

nothing wonderful in an attack of 2,200 yards. The distance to Metz was about 7,000 yards, and the nature of the ground such that a squadron could with difficulty have found room to attack over it. Energy can degenerate into a disease.

As the artillery and cavalry trotted through the hollow, dense clouds of dust, rising high, informed the expectant foe that something extraordinary was occurring. The volume of dust became so dense that eventually the troops could only hear and feel each other. Then the uncomfortable feeling produced by the absolute cessation of artillery, and practical cessation of infantry fire, as the head of this mass commenced to ascend the road on the far side. The four batteries already mentioned and the Cavalry Division trotted past the 29th. The batteries of the 14th Division had lost so much time in limbering up that they were some distance in rear; they consequently remained limbered up, somewhere south of the main road. The Cavalry Division advanced in the following order:—

4th Lancers, 2nd Cuirassiers, 9th Lancers, the battery of horse artillery. The 2nd Brigade followed, consisting of 8th Lancers, 3rd Cuirassiers, and 12th Lancers.

While this division was advancing as best it could, the 9th and 15th Hussars cut into the column, and compelled the rear of it to halt; and while these thirty-two squadrons were wedged in on the road, two ammunition wagons, the horses of which had bolted, and which belonged to one of the batteries which had in the meanwhile come into action near St. Hubert, came flying down the road from the front. For some minutes it was absolutely impossible to move in any direction; the whole of the cavalry were practically incapable of fighting. When the 4th Lancers eventually attempted to form up near St. Hubert, the unfortunate troops were met by a hail of rifle and artillery fire. The crowding, pushing, and shouting increased; everyone felt the defencelessness of their condition, and the inevitable approach of some catastrophe. Suddenly from the rear a trumpet sounded "Threes about." The whole division, with the exception of the 4th Lancers, retired to Malmaison. General von Hartmann, commanding the cavalry division, had recognized the impossibility of carrying out his instructions. This condition of affairs had, however, lasted half an hour, and it was not until 4.30 P.M. that the division formed up near Malmaison. ("History of the 9th Hussars," p. 162.)

When the tail of the cavalry column began to halt, the artillery of the 14th Division had recognized that it was impossible for it to cross to the opposite heights by the main road; it consequently returned to its old position, whence it resumed its fire. After remaining inactive for half an hour, it had to range itself again. It was essential to the success of General von Steinmetz's plan that the hostile artillery and infantry fire should be kept down as much as possible, and not a German gun should have gone out of action. We may attribute the sudden heavy and destructive opening of both artillery and infantry fire by the French to the fact that a large portion of the German guns had ceased firing, either because

they were limbering up, or because they had limbered up in obedience to the orders received.

The four batteries which crossed the ravine went forward at a trot; it was consequently impossible for the Commander of the Corps Artillery to get sufficiently ahead to select a suitable position for them to come into action. When he reached St. Hubert, he recognized the impracticability of the orders he had received. However, he endeavoured, assisted by the battery Commanders, to select the best position possible. The garden wall, about 2 feet high, offered but a slight protection against the enemy's fire. If the artillery attempted to avail itself of the cover it gave, and came into action against Moscow, its right flank was enfiladed at a distance of 400 yards from Point-du-Jour. If it came into action against Point-du-Jour, its left flank was enfiladed from Moscow. It is true that the artillery might have come into action against both the above-mentioned places, by unlimbering on each side of St. Hubert, but artillery consists of men and horses besides guns, and we know from experience that when horses are being struck down by infantry fire the best intentions are frustrated. One can no longer do what one wants to do—one can only do what is possible—and unlimber the guns coming into action as best they can at the spot one has managed to reach with difficulty. In this case a spot south of St. Hubert was reached. From thence they fired in the direction of Moscow. Their fire must have been effective, for though the French infantry made at least twenty forward movements, they never managed to push them to a real attack against the Germans at, and north of, St. Hubert. Even if the artillery of the VIIth Corps had succeeded in unlimbering near these batteries, the position could never be considered a good one, for, owing to the shape of the ground, it was only possible to shell the slope in front, where the French skirmishers were posted, and not the top of the plateau, where their formed bodies were. Owing to the, comparatively speaking, low ground on which the guns were, the larger masses of troops could neither be seen, nor their position guessed at.

The action of the four batteries is described at length in the official account, and as Hoenig's account does not differ in any essential points from the official version, their action need not be further considered.

When the Commanding Officer of the 4th Lancers approached St. Hubert, the 4th heavy battery, which was at that moment on his left, prevented his forming up to attack, in the direction of Moscow, as originally ordered, for to do so he must have halted while the 4th battery moved out of his way. Remembering the masses of cavalry which were behind him, such a course appeared most unadvisable; he consequently chose the lesser evil, and, changing the objective, determined to front towards Point-du-Jour. While doing so, he heard the trumpet sounding the "retire." The 4th Lancers were under a terrible fire, and a retirement under those circumstances appeared to the Colonel most injudicious. It was, however, impossible to remain where they were. The "gallop" was consequently sounded, and the regiment made straight towards the gravel pits. When within

200 yards of the same, it formed into line, fronting towards Point-du-Jour, about 400 yards from the hostile shelter trenches. A slight dip in the ground afforded some cover, and most of the enemy's bullets went high, so the losses incurred were, comparatively speaking, slight. The Colonel remained in the same position for about half an hour, and then, as there was absolutely nothing for them to attack, he retired his regiment, and rejoined the cavalry division at Malmaison. ("History of the 4th Lancers," p. 96.)

The moral effect of the failure of the combined cavalry and artillery attack on the French must have been considerable, not only on the troops themselves, but on the different Staffs which happened to be near Gravelotte; but the physical and material effects were no less great. While the endeavour to push through the Mance ravine and beyond it was being made, the greater part of the artillery of the Vllth Corps had to cease fire, and by 5 P.M. that corps had lost the use of two batteries, which were practically out of action, near St. Hubert. One had lost its way, and got stuck in the soft ground of the ravine (the 4th heavy), three other batteries could not find room to resume their old positions; so that from 5 P.M. the Vllth Corps was 36 guns weaker than it had been earlier in the day.

The situation of affairs on the French side was very different. General Frossard had noticed how the German batteries near St. Hubert had suffered, and he had an infantry reserve of three battalions near Point-du-Jour, prepared to take advantage of any favourable moment. While the 4th Lancers were retiring, these troops, forming a line extending from the quarries to a point about 300 yards south of the main road, attacked straight to their front. This attack was conducted with an extraordinary amount of vigour and rapidity, and met with a complete success. The quarries were recaptured, the men bolting back towards the wood, shouting, "We are surrounded." The gravel pits were also lost by the 33rd. The French in their advance got beyond the 3rd light battery; they, however, ignored both it and St. Hubert, and the mob on the main road, which offered an easy prey. The 33rd were scattered; portions of them which endeavoured to make a stand on the eastern edge of the wood were fired at by the 60th in the confusion of the moment, and both regiments then bolted indiscriminately down the hill. The Staff Officers at Gravelotte, who were already unfavourably impressed by the return of the cavalry, when they saw these men coming out of the wood panic-stricken, without arms or head-dress, cast many an anxious glance towards Vionville for reinforcements. The infantry bullets got nearer and nearer; several of them reached Gravelotte, and struck the gunners south of the village. The French counter-attack was not, however, supported with sufficient vigour from Moscow, and the danger eventually passed away.

The condition of affairs at 4 P.M. was, however, very critical for the Germans, and it may help us if we mention the positions of the various troops at that hour. On the extreme left, III/69th and 8, 7/69th (31st Brigade), in action against La Folie and Leipsic. 6, 5, and I/69th, resting their right on the main road, had got mixed

up with the 28th (30th Brigade), and fronted towards Moscow and St. Hubert. The extreme left, and the centre near St. Hubert, had consequently received the desirable reinforcements. The 29th, which was the other regiment of the brigade, had got into some confusion, owing to the masses congregated on the main road, and only the 1st and 4th companies were able to reinforce the 15th Division simultaneously with the 69th Regiment. The 1st company, after a fruitless endeavour to advance against Point-du-Jour, had turned towards St. Hubert; the 4th, after an equally unsuccessful endeavour, remained near the 4th heavy battery. As the road got less encumbered, the remaining companies of the 1st battalion came up, one made for St. Hubert, the other remained in the quarries lying to the west of the farm. Not much use could be expected from this reinforcement, as it only came up in dribblets, and each dribblet as it came up attempted the same impossible feat that its predecessor had failed in accomplishing. Each company made an independent assault over the open ground, without endeavouring previously to establish itself where it could pour in an effective rifle fire, and thus prepare the way for an assault.

Had such a course been adopted, had a heavy fire been kept up from those positions, and reserves been brought up close to them, then, at least, some of the conditions necessary to success would have been satisfied. Such a course was feasible; the action of the 3rd light and 3rd horse batteries prove that. After the I/29th had been decimated south of St. Hubert, the III/29th attempted the same thing, north of the farm against Moscow, and met with identically the same fate. When the energy of this battalion had been expended, the II/29th arrived, and endeavoured to assault over the ground which had proved fatal to the other two battalions of the regiment, one company going in one direction, one in the other. The Commander of the regiment who had failed a few minutes before in leading four companies to the assault, attempted to succeed with *one*. The other two companies attempted nothing, but made for St. Hubert. The Germans were able to fight by battalions, but to fight by battalions or regiments appeared beyond their task. Hoenig attributes this to their never having practised fighting formations by battalions or regiments in peace time. The manner in which troops lost their direction in moving through a wood may be fitly illustrated by the action of the 10/69th. From the left wing of the brigade it had wandered to the extreme right, and arrived with others at St. Hubert; its march was the counterpart of the march of two companies of the 33rd in the woods, south of the main road, earlier in the day.

Somewhere about the same time that the 2 and 3/29th made their attacks, the 39th (27th Brigade), which had crossed the ravine south of the main road, came into action. The regiment occupied the ground between the St. Hubert quarries to about half-way towards the gravel pits. The reinforcement it brought checked the French counter-attack, of which we have already spoken, and eventually compelled the enemy to retire. The VIIth Army Corps had, however, invaded the zone in which the VIIIth were fighting, and

though it is true that the artillery of the VIIth Corps had done the same, the tactical disadvantages of artillery being mixed up with strange units are not as great as when this happens to infantry. To retain sufficient power wherewith to deal an effective blow, every endeavour must be made not to mix the larger units of infantry. The intrusion of this fresh battalion among the infantry of the VIIIth Corps, though it checked the French, led to consequences which were detrimental to the general object in view. At 4 P.M. the conglomeration of units forming the garrison of St. Hubert was bad enough, but by 5 P.M. there were portions of seven different regiments crowded in the place. A mixed crowd of men, such as were to be found at St. Hubert, cannot be commanded to any good purpose, and the amount of power which is wasted is very considerable.

Up to 3 P.M. neither General von Steinmetz nor General von Zastrow had grasped that the scattered infantry of the VIIth Corps should be formed up, ready to make an attack from the Bois de Vaux. Two hours later nothing had been done in this direction. Yet there were $10\frac{1}{2}$ fresh battalions available for that object. They were, however, utilized to no good purpose, while all the measures taken to ensure the pursuit of the French only led to a series of defeats. The course which was both correct and practicable was not followed, and had the misdirected energy expended in pursuing the wrong and impracticable course been employed in the flank attack from the Bois de Vaux, it must have met with the success it would have deserved.

By about 5 P.M. the bodies of men and horses, together with overturned guns and limbers, had made any movement on the high road somewhat difficult, and columns of infantry amounting to $2\frac{1}{2}$ regiments would appear to have lined it from St. Hubert back to the edge of the wood for over a couple of hours, forming a perfect catch for the bullets which the French poured into them. It did not occur to anyone to retire this mass, which impeded the deployment and movement of troops, both north and south of the high road, re-form them, and then lead them again to the front in some order, which would have enabled them to have been employed with effect.

It seems incomprehensible that such things could have occurred, since for years one of the most popular tactical schemes practised in the Prussian Army was the passage of a defile; yet at the critical moment everyone from General to Lieutenant would appear to have forgotten all the rules which were supposed to have been drilled into them.

The defile was actually lengthened by a living wall of men crowded up together, the exit out of the hole was blocked, and by 7 P.M., when the French made their last offensive stroke, these troops' moral was so used up that they no longer knew whether friend or foe was in front or rear, and when the 3rd German Division crossing the Mance ravine, with drums beating, advanced up the eastern slope, and unfortunately fired into them, the whole mass fell to pieces like a pack of cards, and utterly bereft of their senses, victims of a wild panic,

the picture they presented, as they rushed shouting and howling to the rear, is one which military history has seldom presented to us.

While the Germans were thus wasting their strength, the French skilfully availed themselves of the opportunities which had been afforded to them. The troops were re-formed, the positions occupied by fresh ones, ammunition replenished, and everything done to maintain and increase the moral of the defenders.

Though, as we have seen, Captain Hoenig does not scruple to point out the mistakes made by the Commander of the Ist Army, and by others, he endeavours to treat General von Steinmetz with justice, and points out that in the official account of the battle, an attack is distinctly made against him—even in cases where he was not to blame.

Steinmetz, at 10.30 A.M., was ordered to commence the attack simultaneously with the IInd Army. He was then ordered only to show his artillery *at first*. This order was received at 1.15 P.M. It must always be borne in mind, however, that the orders of 10.30 A.M. were the important ones, and the orders under which the action was to be fought. Subsequent instructions were only explanatory, and did not nullify the original orders. The instructions received at 1.15 P.M. premised that the fighting audible at 12 noon, near Verneville, was a desultory fight. When, however, these instructions were received, it was clear that the artillery fire audible on the left was not the result of desultory fighting, but that a general action was taking place. These instructions were, consequently, nullified, their premises at the time of reception being false, and the original order of 10.30 resumed its full force; and, as Steinmetz received no fresh ones, he was bound to act on the original order received, and he must be held justified in all that he did up to 3 P.M.

The official account does not treat Steinmetz fairly. The serious faults committed by the IInd Army, such as the faulty reconnaissance made, the crossing of the Guards and XIIth Corps, are glossed over: though both these faults disturbed Moltke's plans materially, while attention is sometimes even drawn by means of italics to mistakes attributed to Steinmetz.

It is incorrect to state that the main idea conveyed in the orders was that the right wing of the Germans was to "hold the main forces of the adversary in check until the left wing of the IInd Army had thoroughly cleared up the situation on his lines of retreat, and in the event of the French forces making a stand to the west of Metz until it had surrounded their left flank from the north" (p. 103).

Undoubtedly such was Moltke's idea. Steinmetz, however, was not informed where the French right really stood, nor when the IInd Army made its simultaneous attack, and he could, under the circumstances, only judge that the attack was being made by the heavy fire audible on his left.

At about 4.30 P.M. the Royal Headquarters were in rear of the right wing of the Ist Army. Up to that time General von Steinmetz had reported to Headquarters what had occurred in his army. First, the success of the artillery duel against the batteries near Point-du-Jour, then the capture of the woodland, next the capture of St. Hubert,

and, finally, the advance of his cavalry and artillery over the Mance Valley. The orders for this last move were issued at 3 P.M.; at that hour the Headquarters were still near Rézonville; it would, consequently, appear that they themselves expected the decisive result to occur near Gravelotte, and had for that reason selected the bad position they took up, so as to be close at hand when the decision was arrived at.

If, as we are officially informed, anything more than a display of artillery on the part of the 1st Army was contrary to Moltke's intentions, why, as the above-mentioned reports reached him, did he not send Steinmetz further instructions telling him to keep the main forces of his army back? How is it possible, under those circumstances, to condemn in this respect General von Steinmetz's action up to 3 P.M.?

There is another point on which the official account is misleading. On p. 110 we are informed that the action of the 26th Brigade in threatening the extreme French left caused Marshal Bazaine to divert his attention from the decisive portion of the battle-field. By that can only be meant that it caused him to keep his reserves near his left.

The 26th Brigade marched on Vaux at about 4 P.M. (p. 106), and, according to the official account itself, Bazaine had by 3 P.M. disposed of nearly all his reserves. How can these statements be reconciled? As a matter of fact, the appearance of the 26th Brigade, as well as of the German troops, on the right bank of the Moselle, had no particular effect on the battle. Bazaine made no alterations on account of the appearance of these troops, beyond reinforcing Lapasset's brigade with a couple of batteries of Guard Artillery, and bringing some artillery near St. Quentin into action.

Judging from the official account, it is not clear what orders were given to the 26th Brigade.

On p. 93 we read that, at 3 P.M., orders were sent to this brigade to attack the extreme left of the enemy and march on Vaux. These orders were received at 4 P.M., and by 6 P.M. the brigade had forced back the skirmishers of Lapasset's brigade and occupied Jussy, which was feebly held, and still more feebly defended, and with this its activity ceased. This action could hardly be considered in the light of an energetic attack on the enemy's left wing. This seems to have been recognized, for we are suddenly told (p. 109) that General von der Goltz, in accordance with the spirit of the instructions received from the Headquarters of the 1st Army, was intended to help the Prussians in making the attack from the Bois de Vaux. One naturally asks, what instructions did General von der Goltz receive? On p. 106 we only hear of one—and none others are mentioned afterwards. On p. 109 we suddenly hear of instructions which, under the circumstances, would have been absolutely correct ones to give.

According to the account given on p. 109, General von Steinmetz did intend attacking from the Bois de Vaux. This view, however, falls to the ground when we consider the arrangements actually made by General von Steinmetz. He made no arrangements for an attack

from the Bois de Vaux: on the contrary, at 4.30 P.M. he requested the Royal Headquarters to direct the IInd Army to assist him by operating against the right wing of the French ("Moltke's History of the 1870-71 War," p. 175, German version).

The official account, in dealing with the southern portion of the battle-field of Gravelotte, is guilty of several inaccuracies and contradictions. It informs us (p. 111): "That the original task of the Ist Army, that of drawing the adversary upon itself, was fulfilled, and by the impetuosity of the troops, to a certain extent, exceeded. For, whilst the VIIth Army Corps, in accordance with its former instructions, had in general limited itself to maintaining those places which it had originally occupied, the VIIIth had, with the capture of St. Hubert, moved close up to the enemy's main position. The French must, therefore, have expected, at any moment, an attack upon their *left* wing, and kept, in consequence, their reserves in rear of the centre until it was too late to support the *right* wing."

That was not the original task allotted to the Ist Army. Its original task was to attack from the Bois de Vaux and Gravelotte simultaneously with the IInd Army. It was not the impetuosity of the troops which caused the instructions to be exceeded; it was the orders for the pursuit, given by General von Steinmetz and by General von Zastrow, which caused the great loss of life. The capture of St. Hubert was essential, whether the Ist Army was operating on the offensive or on the defensive. Artillery fire alone will neither hold an enemy in check, nor draw the enemy on; an effective defence cannot be obtained by artillery alone: infantry must be put into the fighting line for that purpose. It is not a fact that Bazaine kept his reserves till 5 P.M. in rear of the centre. He had disposed of nearly all of them by 3 P.M.

The Royal Headquarters slowly made their way towards the German right wing, and at about 5 P.M. they established themselves south of Malmaison. Here Count Warlensleben, Quartermaster-General to the Ist Army, reported verbally how matters stood with that Army. Shortly afterwards, Lieutenant-Colonel von Brandstein brought the Headquarters the first definite information about the position of the French right wing. From his report it was evident that the dispositions made by the IInd Army were absolutely in accordance with the spirit of the intentions of the Royal Headquarters. It would have been better, however, if the Royal Headquarters had known from their own knowledge what was occurring on the left—or at least had selected a better position for themselves. Up to 5 P.M. they had been too far in rear; now, though well up to the front, they were in rear of one wing, and it took a long time to communicate with the other. Though, owing to the activity and initiative of Prince Frederick Charles and the then Crown Prince of Saxony, this disadvantage was not severely felt, yet, even up to the end of the day, great uncertainty prevailed about the progress and issue of the battle as far as the IInd Army was concerned.

As long as one had reasonable grounds for expecting to come across the enemy somewhere between Rézonville and Ville-sur-Yron,

the selection of the position near Flavigny might be understood, but once the orders of 10.30 A.M. were issued, Flavigny was no place for the Royal Headquarters to remain at, and after the opening of the battle, any further stay near that place became a blunder. Though the Headquarter Staff of the Commander-in-Chief should not interfere with dispositions made by subordinate Commanders without some excellent reason, it is highly probable that if the German Commander-in-Chief had been near Malmaison at about 1.30 P.M., matters would have taken a different course in the 1st Army. The assumption that the enemy was retreating at about 3 P.M. would, undoubtedly, not have been shared, and the consequent arrangements for pursuit would have been stopped. The late appearance of the Royal Headquarters on the battle-field had already met with a severe punishment, though worse was yet to come.

Shortly after 5 P.M. it was noticed from Malmaison that the hostile infantry fire had considerably decreased, while at times the artillery fire ceased entirely. The correct inference was drawn that it was due to a state of exhaustion on the enemy's part, and it was given to be understood that the King of Prussia desired the simultaneous attack, and the consequent dispositions for its successful issue to be made.

An attack made by large masses presupposes that certain arrangements have been made, such as suitable rendezvous spots and battle formations for the various units, as well as a fair knowledge of the enemy's strength and positions. To use the attacking troops to the best advantage, roads and means for deployment are necessary; the objectives of attack should be clearly known. All these are necessary conditions; they are doubly necessary when one army is to make a simultaneous attack in combination with another.

Although the attempts to break out from the Gravelotte defile against Point-du-Jour had all failed, even after 5 o'clock General von Steinmetz obstinately continued to ram his head against the French position, as he had done previous to that hour. The attraction of that high road was too strong to be overcome. Yet it is absolutely impossible to make a simultaneous attack from one road, more especially when that road forms a defile and is within range of the enemy's rifles. To have made an attack simultaneously with the IInd Army, it was at least necessary that the attack made by the Ist Army should be a combined one.

From 12 noon to 5 P.M. nothing was done to ensure this end. Several lines of advance were necessary to ensure the troops attacking at the same moment, particularly so when the orders directed that the attack should be made in front and flank, and if the means for the proper deployment of the troops failed, they should have been made. Roadways through the woods could well have been made between 12 noon and 5 P.M.; the loss to the troops and expenditure of strength in cutting them would not have been as great as they were under the actual circumstances of the fight, and by the latter hour the troops would have been prepared to attack along a long front, instead of a large proportion of them being massed on

the high road, exposed to a heavy hostile fire, which rendered it difficult, if not impossible, to establish order and cohesion among them.

Even westward of the exit from the defile matters were not much better. Officers were engaged in collecting the men together and leading them back to the fighting line. There were so few Officers available for this duty, that little could be done in this direction. The battle-field, consequently, presented an appearance which was not without its effect on the fresh troops which were brought up. Men were constantly bolting for the cover afforded by the trees, and then they stole away to the rear and hid themselves in likely places where they hoped to escape the eyes of the Officers and the enemy's bullets. This stream continued till after dark, and as fifty-nine companies were collected in and about St. Hubert, they formed, so to speak, the reservoir which fed the stream.

The French, whose fire had nearly died away, suddenly, at about 6.30 P.M., hid themselves in a dense cloud of smoke, opening a violent artillery and infantry fire against their opponents. What caused this sudden outburst? Standing on the highest ground near Point-du-Jour, one notices about half way towards Rézonville, a hollow (924 in map of Gravelotte). The French from their position could see the 3rd German Division just emerging from this hollow, accompanied by the Corps Artillery. Captain Hoenig informs us that Marshal Leboeuf frequently stated to him that the field of helmets appeared to extend from Gravelotte to Rézonville. None of the French Generals would appear to have estimated the number of these fresh opponents correctly. They were of opinion that it was the reserve army under the immediate orders of the King of Prussia, and was estimated to amount to at least two army corps; some estimated that the additional strength to the Germans amounted to three corps.

As the IInd Corps advanced in three distinct groups, this false estimate is easily explained. The French felt they were not strong enough to cope with these new arrivals; it became no longer a question of winning a victory, but of getting out of the business with honour. The only means of doing so was by gaining time; a counter-attack afforded the best means of doing so. Leboeuf and Frossard both agreed to hurl themselves with all their available troops against this reserve army at the moment it attempted to deploy out of the Mance ravine. The results will show us how difficult such a counter-attack is on the part of the defender, for, as a matter of fact, a combined counter-attack from Point-du-Jour and from Moscow did not take place. The attack was only delivered from Point-du-Jour, and there it was delivered much too soon, and it would appear that Marshal Leboeuf refrained entirely from making his attack, for when Frossard broke out from Point-du-Jour, the former had not completed his preparations; when he was ready, Frossard's offensive stroke was spent, and his troops falling back, and consequently Leboeuf did not attack. The French counter-attack was made too soon to fulfil its object, and was probably made with about half the strength

that was intended. We now understood how it was that St. Hubert was not attacked at all.

This offensive move was, nevertheless, the most vigorous one of the day; Bastoul's and Verge's divisions took part in it, and it was made both rapidly and skilfully, except that, as just stated, it was premature. About 300 yards from the most advanced shelter trenches of the French and south of the high road, were several irregular groups of skirmishers belonging to the VIIth and VIIIth Corps. These skirmishers kept up an intermittent fire against their opponents, and certainly did not expect to be attacked themselves. The sudden heavy artillery and infantry fire which fell on them made a deep impression, and before they had realized that a new phase in the fight had occurred, a line of skirmishers extending from the quarries of Rozerieulles to beyond the direction of Point-du-Jour appeared out of the smoke, closely followed by columns at fairly regular intervals. The French came forward at the double in excellent order, and as they came down the slope, the fire from the rear ceased, while bugle-calls, beating of drums, and shouts of "En avant" and "Courage" filled the air.

This counter-attack could be seen with the naked eye from the heights near Gravelotte; from there it appeared as if the French had reached the eastern edge of the wood, and, working through it, were continuing their attack on Gravelotte. To most of those standing on these heights it looked as if the guns south of St. Hubert had been captured. It was impossible to estimate the strength of the French counter-attack either at Malmaison or at Gravelotte. The general impression was that it was made by a division of fresh troops; this was, however, a false estimate. The German guns at Gravelotte caused a great thinning out of the French columns, but it was impossible to tell whether they had brought the French onslaught to a stand or not. While still in uncertainty over this matter, there suddenly appeared from out of the western edge of the wood a mob of panic-stricken men, belonging to various regiments, making for the high ground occupied by the German guns. For a moment or two it was impossible to distinguish whether the disorderly array of men coming towards them were friends or foes. These men, panic-stricken, all sense and moral entirely lost, might possibly be French attacking lines. But in a few seconds it was clear that the men coming towards them were German infantry. Absolutely and entirely under the influence of a deadly fear, neither words of command nor anything else could stop them. Several artillery Officers rode amongst them with drawn swords, they were told they would be shot down by their own guns. It was all useless. On such occasions men are past reasoning with. It being impossible to gather this "scum" from the fight, attempts were made to direct their retreat clear of the guns; that also was impossible. Driven by the panic which had mastered them, the fugitives made straight for their own guns, bolted through them; not even the voices of the German gunners could bring them to reason. The men were only halted when well in rear of the artillery, and Officers of all branches, from Generals to

Lieutenants, were engaged in halting them. The Royal Headquarters, as well as the Headquarters of the 1st Army, were greatly troubled at the occurrence, and every endeavour was made to prevent a defeat, culminating in a retreat, occurring on this portion of the battle-field.

As an instance of how the moral energy of the German firing line was spent when this attack occurred, it was sufficient for one man to shout "Columns!" "Columns!" to make a company, which was about 300 yards in front of the wood, bolt straight back to seek shelter inside it.

The French attack, as a matter of fact, never reached the wood. The troops who had made this attack had been fighting all day, and the destructive effect of the German shells, combined with the appearance of fresh infantry on their right flank, was sufficient to stop the French about 150 yards short of the woodland. The extent of the advance was distinctly marked by the line of corpses. From Gravelotte, however, it was impossible to tell this.

The German infantry, which had succeeded in turning the tide of French success, were four battalions belonging to the 32nd Brigade, which General von Goeben had sent forward towards St. Hubert at about 6 o'clock. The appearance of this column caused the French not only to halt in their attack, but to bolt back towards Point-du-Jour. The four battalions followed up their advantage, and from St. Hubert it appeared that the frontal attack against Point-du-Jour would finally meet with success. The advance was anxiously followed, but shortly before the bend of the road near 1076 was reached, a rain of bullets fell upon the battalions; they halted and wavered, and this attack, begun with so much hope, was wrecked. Throughout the many hours the fight had lasted, this was the first combined attack of several battalions on the enemy's position, the first great infantry attack on Point-du-Jour. Though the General Commanding the 16th Division had not succeeded in his attempt, he had at least succeeded in restoring the battle, and he might rest content with having done so much.

It has been said that one of the reasons the French made no attack from Leipsic was because Marshal Lebœuf had expended all his reserves. By this, however, we must not suppose that the whole of his corps had become absorbed in the firing line. Lebœuf had committed the great fault of letting all his four divisions out of his hands without having any troops in reserve for him to use as required. The General Officers Commanding Divisions, however, with the exception of Aymard, had all, comparatively speaking, strong reserves at their immediate disposal. It would always have been possible throughout the day for the Marshal to have collected sufficient troops together to have formed a division. The Germans owe to the faulty management by Marshal Lebœuf of his corps their immunity from any serious counter-attack on his part.

The panic south of the high road has been described; another occurred shortly after, on the road and its immediate vicinity.

The 9th Hussars had followed the four battalions of the 32nd

Brigade down the road and halted under cover of the high ground westward of St. Hubert. While in that position the remounts and additional drafts joined it from Trier. The Colonel, instead of sending them back to the rear at once, turned them into a 5th squadron, which formed up in rear of the 4th. This 5th squadron was a most undesirable addition to the regiment, for the horses would not stand fire, were nervous and excitable, and were not thoroughly trained. When the attack of the 32nd Brigade came to a standstill, the hostile fire increased in violence, and the hussars plainly saw their own infantry in retreat. The Colonel ordered his men to mount, intending to retire the regiment a few yards. The orders to retire, halt, and front were well executed by the original four squadrons. The 5th, misunderstanding both signals, at first retired at a trot. The horses, frightened by the bullets, went faster and faster, and eventually bolted. They clattered through Gravelotte, to the consternation and astonishment of the beholders, and charged the remnants of the infantry who were being slowly collected together after the rearward movement, which had been already mentioned. But the worst was still to come. On the right side of the road a large number of wagons and spare horses were halted, in excellent order, the left side being kept free for the movement of troops. The teams became restive at the approach of the hussars, could not be quieted; they tried to follow them; those that succeeded bolted, and all helped to increase the horrible confusion that reigned. It was in vain that Officers attempted to stop this mad flight of men and horses; they all of them forced their way to the rear. The confusion was indescribable. The Royal Headquarter Staff and the Commander of the 1st Army looked on sullenly at the disagreeable spectacle. The IInd Army Corps, which was approaching, in spite of all its enthusiasm, could not avoid being badly impressed by this sight. No one could see a reason for the panic. Blows with the sword and oaths were powerless to stop the maddened fugitives. It was only when the lungs of men and horses gave out that the wild stream stopped, and endeavours were made to collect them, naturally, well in rear of the IInd Army Corps. Several fugitives appeared in Vionville and the neighbourhood, exclaiming, "We are beaten, we are beaten." Several Officers lost their spare horses and never saw them again.

The remainder of the regiment remained till the end of the battle near St. Hubert; one squadron charged to cover the retirement of the infantry.

This is mentioned, as it would be unfair to judge of the hussars by the conduct of the 5th squadron. The panic above described is, when explained, easily understood; it also is not without its instruction for the future.

The orders given to the IInd Corps to attack Point-du-Jour with all their available forces would appear to have been given by the King himself, and they were given directly contrary to the desires expressed by Steinmetz, for, as already mentioned, when making his personal report to the King at 4.30 p.m., he had requested that the IInd Corps be employed against his enemy's right wing, a frontal

attack being hopeless. We find that two hours after Steinmetz had declared a certain action impossible, the King declared it was to be done. The question arises whether General von Steinmetz urged any reasons in favour of his opinion as to the inadvisability of a frontal attack. Captain Hoenig says he did not, and the reason is not difficult to seek. The meeting of the King and General von Steinmetz took place at too great a distance from their respective Staffs to enable anyone to hear what words were exchanged between the two. It was evident, however, from the excited gestures of the King and the serious expression on Steinmetz's face as he rode away, that the former had expressed his disapproval of the measures taken by the latter up to the hour of their meeting. From that moment General von Steinmetz's ill-temper increased, and he carefully avoided coming again in contact with the King, and simply acted strictly in accordance with any orders he received.

If, however, General von Steinmetz would not express his doubts about the advisability of the orders given to the IInd Corps, it was done by no less a person than General von Moltke. After the order to attack Point-du-Jour had been issued to the IInd Corps, and the preparations were sufficiently advanced to enable one to point out to the King that the direction adopted by the corps would be undesirable, all the consequences of the order appeared so clearly before General von Moltke that he expressed his great doubts, both as to the advisability of any further attack at that late hour of the day, and more especially of a frontal attack.

Even as early as 10.30 A.M., the orders were given to attack from Bois de Vaux, as well as from Gravelotte. Since his arrival at Malmaison, he had noticed how little had been done from the former direction, and that the enemy's left wing had not been pressed as he intended it should be. The objections to an attack made at dusk, without adequate preparations, were obvious, and the hopelessness of its succeeding without support from the direction of the Bois de Vaux was pointed out to the King. The latter, however, declined to cancel the orders he had previously given; the manner of executing the same was left to General von Steinmetz.

The wish to force the battle to a decisive issue before the day closed, after a struggle of many hours, is comprehensible, and the belief that the opponent was exhausted by his efforts was a fair one. The King's opinion should not therefore be criticized as unsound, but, to give effect to it, the best means should have been chosen. When we consider the stress laid in the morning on the flank attack being made from the Bois de Vaux, and the orders issued by the King for frontal attack without the combination of a flank one, we perceive a want of harmony between the two. In describing this important occurrence, the Field Marshal expresses himself as follows:—

“At about this hour (6 P.M.) the King and his Staff had ridden forward to the height south of Malmaison. But it was not possible to distinguish how matters had shaped themselves on the enemy's left wing, which was over 4 miles from the spot where the Staff stood. Along the entire front, from La Folie to Point-du-Jour, the hostile

artillery had very nearly died out, whilst from the north the report of heavier artillery fire was audible. The day was drawing to its close; it was necessary to force a decision. The King ordered the 1st Army to make a fresh advance, and he consequently placed the IInd Corps, which had just appeared after a long march, at General von Steinmetz's disposal.

"All the available battalions of the VIIth Corps were, *with the exception of five acting as a reserve*, therefore again sent across the Mance valley.

"The line was prolonged towards Point-du-Jour and the quarries by the battalions already formed up in the Bois de Vaux.

"The 2nd French Corps, which had to meet this attack, had just been reinforced by the Guard Division of the Voltigeurs. The whole of their reserves were brought into the firing line. The artillery redoubled its activity, and a destructive rifle fire was poured in against the advancing foe. Then the French proceeded themselves to the attack; their men, being in dense swarms of skirmishers, drove the smaller bodies of Germans, who were leaderless, and were lying down in the open field, back towards the edge of the wood. Here, however the French attack reached its limit, but the Germans had a fresh corps at their disposal.

"The IInd Corps, which was the last to be despatched by rail towards the theatre of war, had followed up the advance of the army by forced marches, without, however, having been able to partake in any of the previous combats. It had commenced its march at 2 A.M. from Pont-à-Mousson, and had arrived *viâ* Busières and Rézonville, to the southward of Gravelotte, in the evening. *The wish of the Pomeranians to come to conclusions with the enemy that self-same day was loudly expressed.*

"*It would have been better if the Chief of the Staff of the Army (himself) had not permitted this corps to advance at such a late hour. An intact body of men like these would have been most desirable for the following day. On the same evening, however, it was hardly to be expected that they would be able to cause the balance of victory to incline decisively towards the Germans.*

"It might have been desirable that the less exhausted IInd Corps should have been sent into the firing line, to hold and occupy it, while the various portions of the VIIth and VIIIth Corps, which were all mixed up together, were collected and re-formed in rear of them."

Captain Hoenig states that on reading the last words that appeared in italics, he had at first felt inclined to omit what he had already written on that point, but on receiving fresh information on the subject he came to the conclusion that his account was strictly in accordance with the facts. He tells us that several eye-witnesses informed him that when Moltke found that the King would not act on his advice, but that the desire of the former became an order, Moltke slowly turned away from the King, rode off about 100 yards to the right, and appeared to occupy himself with something else. He intended the idea to be conveyed that he did not agree with the orders issued. Those who witnessed the occurrence understood it in

that sense, and were greatly impressed thereby. Later on, as the IInd Corps approached the western edge of the wood, Moltke followed it for a few paces along the high road, accompanied by a number of Officers of the General Staff, while the King remained near Malmaison with Bismarck, Roon, and Podbielski. The Headquarter Staff were not together again till after dark.

It is difficult to believe that a General like Moltke did not recognize on the spot that an order, which he afterwards condemned, was in itself a mistake. It seems so little probable that one asks what motive Moltke could have had in writing as he did, why he should take on himself the responsibility for an action which took place against his advice? The motive is to be found in the preface to his own history of the war. Moltke says, "What is published in a military history always fits in with the story of a successful action, but it is a duty one owes to the dead, to one's love of country, not to disturb any prestige which may accrue to any individuals, owing to any of our victories being attributed to them." From this, it would appear that Moltke deliberately took upon himself the responsibility for the order given to the IInd Corps to attack that night, in order to put an end to any discussion on the subject, and to shelter his King from any adverse criticism.

The orders given to General von Steinmetz were, that he was to set "all his available troops in action against the heights of Point-du-Jour," the details being left to him.

At 6.45 Steinmetz ordered Von Zastrow to lead all the battalions of the VIIth Corps still this side of the wood over the Mance valley. Whether they were to be led from the west against the front, or from the south-west against the flank, is not known.

The Commander of the IInd Corps was ordered to attack Point-du-Jour in front, and, with the assistance of the troops of the VIIth Corps on his right, capture the hostile position under all circumstances.

On reference to the extract from Moltke's history, it will be seen that Von Zastrow did not carry out his orders. He wanted no reserves at that hour. The IInd Corps formed the reserve for the army.

General von Fransecky did not expect any satisfactory results from the orders he had received; he knew Steinmetz too well, however, to care to make any representations to him on the matter. He decided to deal with matters as they stood. He knew that from where he stood brigades had repeatedly entered the wood, only to emerge on the other side as companies, and that every one of the attacks made in that manner had failed. He ordered the infantry, keeping well closed up, and maintaining all their tactical units, to follow the high road. The head of the column, after passing the eastern edge of the wood, was immediately to wheel to the south, gain ground towards Point-du-Jour, and then await the deployment of the rear of the column, in order that the enemy might be crushed by the rush of a compact body of men. In this manner, thanks to their superior discipline, the Germans hoped to make a successful night attack. The 3rd Division could not possibly deploy and be ready for attack before 8 P.M. The cavalry was to remain at Gravelotte.

Only two and a half batteries prolonged the line of German guns to the south; the remainder had to halt west and south of Gravelotte.

Though the IIInd Corps was, compared with the VIIth and VIIIth Corps, a fresh body of troops, owing to the hour at which this final attack was made, this advantage was nearly balanced by the fact that the German artillery was compelled to cease its fire, for from their position it was impossible to distinguish their own troops from the enemy's. The attack by the Germans was necessarily purely an infantry attack, unsupported by any artillery; the French, however, were able, for the first time, to bring their guns into action and direct them against the attacking infantry without fear of being crushed.

The 3rd Division marched down into the defile with bands playing and colours flying. Unfortunately, the music had not the inspiring effect it was intended it should have. It has already been stated that the men near St. Hubert formed a reservoir which fed the stream which was continually flowing westward. A large number of these men were collected at the bottom of the ravine. Their reasoning powers had left them for the time, and, on hearing the sound of the music—unable to distinguish whether it came from friend or foe—they rose from their concealment and bolted for the rear. This naturally created a certain amount of confusion, but the advancing troops were not particularly disorganized by the event. When, however, the troops in and near St. Hubert were fired at from the rear, the slight bonds that kept them together were snapped, and a flood of fugitives burst on to the 54th, the leading regiment. The shock was so violent, that the fugitives broke through it and swamped it; the regiment consequently got out of the direction it was ordered to move in. As other troops were advancing close alongside the 54th, the fugitives charged them also; and it was with the greatest difficulty that order was kept. Thus we see that, in the dark, there were two opposing streams, one rushing in disorder from front to rear, the other moving forward towards it. Matters remained like this for some hours, until the IIInd Corps was formed up in close order near the enemy's position. Under the circumstances, all idea of a night attack had to be abandoned. Any combined movement by the IIInd Corps had been nipped in the bud by this fresh panic, the worst and longest one of the day. The Generals had to be satisfied if they could manage to dam the disorderly stream of fugitives, and, instead of a deep wall of men, in column extending from front to rear, establish a thin line along the entire front opposite Point-du-Jour.

Thanks to a good state of discipline, this difficult task was successfully accomplished. It was of course impossible to think of continuing the fight; every condition to bring it to a successful issue was wanting. It is impossible to give a more detailed account of this panic and of its effect in rear of the fighting troops, for darkness had concealed everything. It is a blessing that the French forces were spent, for at this period, a fresh brigade, boldly led, would have obtained, locally, a decisive victory, for, at that time, the greater

portion of the 3rd German Division was, comparatively speaking, defenceless. It was wedged in near the wood and on the road, the fugitives from the front pressed against it from one direction, and the remaining forces in rear pressed on it from the other; this, combined with the woody nature of the country and the darkness, rendered it impossible for the division to deploy for a considerable time. This was the most critical moment of the day, but luck favoured the Germans, and no disaster occurred.

The modern battle is wonderfully destructive of the moral of the soldier. It can be reduced to a low ebb by the mere effect of remaining for a considerable time under hostile fire, as well as by an unsuccessful attack, the only difference being that the effect is more quickly felt in the latter than in the former case. The effect of a long exposure to hostile fire is even, possibly, the more destructive to the moral of the two. A panic and a flight are usually the consequences of the sudden appearance of something unexpected. Troops which are not even threatened get seized with it. It is perfectly comprehensible that, after a long strain, the moral power of the best suffers; but in spite of this, one rule must never be relaxed—attention must be paid to the enemy, and his movements watched. Even when troops are lying as close to the ground as possible, unable to advance, some Officer must watch at every important point, and should he be placed out of action, he must be replaced by another. It is only by these means that false reports, false impressions, &c., can be dealt with in time to prevent their effect being harmful.

The number of men who streamed away to the rear was very large. The firing line became thinner and weaker, and the Generals eventually discovered that there were only a few hundred rifles when they thought they had brigades engaged with the enemy.

At about 7 P.M. an event occurred which, for some extraordinary reason, is not mentioned at all in the official account of the battle, although it was the most important tactical success that was gained on this portion of the field during the day. This was the capture of the quarries of Rozerieulles. Their capture paved the way to an eventful victory before the 3rd Division had been engaged. It must be observed, however, that Brigade Commanders and Officers junior to that rank received either insufficient orders, or none at all; they received no objective for the attack; their orders were simply to "attack." In the case of a frontal attack, such an order may be permissible, for under those circumstances it is often impossible to specify particularly what the objective is to be. But in the case of a flank attack the circumstances are different, and an objective should be definitely selected. About the time St. Hubert was captured, it will be remembered that the 33rd rushed from the gravel pits to capture the quarries. The official account only mentions the account casually, and, in addition, puts a false complexion on the facts, for it states that the 33rd were driven back by the overpowering fire of the French (p. 89), and, consequently, the quarries could not have been captured.

The quarries of Rozerieulles form the natural objective for a frontal

attack as well as for an attack from the right towards Châtel St. Germain. The distance from the edge of the wood to their south-west corner is about 350 yards. Their length is about 700 yards, their extreme width 440.

The south-west corner of the quarries was open, but the main portion, lying between the main road and the road running to the gravel pits, did not convey the impression of being so. This was because it was divided into five subdivisions, by four walls cutting across it, so that coming from the westward one could only see as far as the next wall. The distance between the walls averaged from 90 to 130 yards. This series of walls was a disadvantage to the French, for they could not regularly occupy each of them, while to the Germans they were a distinct advantage, for as each portion was captured they could shelter themselves under cover of them.

The French, after having retaken the quarries at about 4 P.M., did not remain there, but retired back to the high road. Of this fact, however, the Germans were ignorant, and at about 7 o'clock portions of the 33rd, 39th, and 40th, under the command of a Captain, stormed the south-western portion of the quarries. They doubled from the wood, where they had been formed, to the quarries; on reaching them the whole party were utterly out of breath, and were, for a few moments, incapable of any action whatever. When they had recovered their breath, they pushed on through the quarries till they reached the most easterly wall. This wall had barely been occupied when a closed body of French infantry were seen on the high road, marching towards Metz. When they arrived opposite the Germans, they were fired at, at 150 yards elevation. The column was evidently surprised, and unaware that the Germans had penetrated into the quarries. A second column attacked the German left wing, advanced to within about 70 yards, fired nine volleys, and then retired to continue their march. As they did so, they suffered severely from the fire of the Germans. A third body of troops acted in the same manner, and met with the same fate. A fourth then made a frontal attack, with a deal of resolution and in close formation, but this was repulsed, and a pause ensued in the fight. It was then noticed that the only places where the Germans, who were lying down, were wounded, were in the legs and feet, from which fact we may deduce that separating the legs when lying down is not always advantageous. Shortly afterwards this body of men were reinforced by about two more companies, and firing having completely ceased at about 9.15 P.M., the Germans evacuated the quarries at about 10 P.M.

Had this success, obtained by a handful of men, been followed up as it should have been, the defeat on the French left would have been as decisive as their defeat near St. Privat.

Owing to the distance of the quarries of Roserieulles from the positions occupied by General von Steinmetz and General von Zastrow, any report that the quarries were in German occupation at 7 P.M. would have reached them too late. It is not the business, however, of Officers in the firing line to send back reports; no blame can, therefore, be attached to them for not sending any. General von

Zastrow should have taken steps to ensure that reports reached him of every important occurrence from the Mance Mill and the Roserioules quarries. If a lancer regiment was able to remain formed up for a considerable period east of the wood, what difficulty was there in posting Staff Officers and Adjutants near the east edge of the wood as well, so as to see and report on what was occurring? That is where they should have been during the action, not west of the wood near Gravelotte. The simplest rules were not followed; there was no indication of any plan having been formed; the troops in front never knew what was intended of them; the Generals in command did not know where their troops were or what troops belonged to them. There was no connection between the men in the firing line and the Generals in rear, and both the men and the Generals were fumbling about in the dark. And yet at peace manœuvres the number of reports that come in about matters of no importance is marvellous. Had this connection from front to rear been maintained, General von Steinmetz would have known at 3 o'clock that the quarries were captured, but both he and General von Zastrow were as ignorant of the first capture as they were of the second. Even with the leadership that existed, had information of the first capture been received, sufficiently powerful reinforcements would have reached the quarries in time to give a decisive turn to the fight. Perhaps the reason for suppressing in the official account the whole of this most heroic deed on the part of the men was that it was feared that thoughtful men with the above facts before them would have formed their own opinions about the stamp of leaders the Germans had. The troops did all in their power to show from which direction the victory would be decided, but their leaders appreciated it no better than they understood Moltke's orders for battle. The attack made by the IInd and VIIth Corps at 7 P.M. was made in complete ignorance of the true condition of affairs that the capture of the quarries had brought victory within their grasp.

While the battle was raging with all its vehemence in front, a terrible scene was being enacted in another portion of the field. The French who had been severely wounded in the action of the 16th August had been brought to the various farmhouses in the neighbourhood, such as Malmaison and Mogador. When the Royal Head-quarter Staff took up their stand between these two named places, the target they presented was too tempting for the French artillery to resist. Mogador, though the Geneva flag did not float above it, was to all intents and purposes a hospital, and was full of wounded. The unfortunate victims of the 16th, owing either to a lack of organization or to some forgetfulness on the part of the French, had been abandoned when the army retired to the Leipsic—Point-du-Jour position. The wounded had no means of communicating with the outer world, and the Germans were in entire ignorance of the existence of any wounded in the building. Eventually the French shells set fire to it. There is nothing extraordinary in a burning building; during a battle one is occupied with matters of more pressing importance, and the building is generally left to burn itself out. The wounded

were burnt to death, and it was only the next day that the Germans were aware that Mogador had been turned into a temporary hospital.

Captain Hoenig's works on Gravelotte only deal with the action of the German right, but for purposes of comparison we are given a general idea of the manner in which Prince Frederick Charles acted as an army Commander. As soon as he heard the sound of the guns, at about 10 A.M., he directed his steps towards them. At 1 P.M. he was between St. Marcel and Verneville, at 2 P.M. at Habonville, and there he remained near the decisive point till the close of the battle. Napoleon could not have acted better, and Prince Frederick Charles by his action during the battle, ably seconded by the Commander of the XIIth Corps, succeeded in minimizing the consequences of the strategical errors committed on the previous day. Both the Royal Princes fully grasped the strategical situation; they both attempted to reach the last line of retreat of the French, the valley of the Moselle, and they succeeded in doing so. Napoleon, who has been unapproached, committed errors. The true General is the man who understands how to put matters right after a mistake has been committed, and before the full effects of the error have been able to make themselves felt. Though we may find ourselves compelled to criticize unfavourably the extreme caution and want of enterprise shown before the battle, we must in justice state that as soon as the Commander of the IInd Army received the report giving the position of the French left, he showed himself fully capable of dealing with the situation; his method of conducting the battle need fear no hostile criticism.

The remarks made by Captain Hoenig on the choice of positions selected by the Royal Headquarters Staff have already been given, and need not be reproduced.

General von Moltke had watched the last conflict of the day from the slopes of Point-du-Jour, and at about 10.30 P.M. he rode back with the Headquarters towards Rézonville. The impression which the fighting of the Ist Army had left on him was not favourable, and it was with reluctance that the General left the scene of action. He was, however, fully resolved that after the VIIth and VIIIth Corps had been rallied in rear of the IInd the battle should be renewed and brought to a decisive issue early the following day. Though many things must have occurred which were displeasing to the General, he at least knew from his own observation the position of affairs with the Ist Army, and that during the night nothing could occur to alter it. With the IInd Army matters were different. St. Privat had fallen at about the same hour that the IInd Corps deployed for attack, and shortly afterwards the French evacuated Amanvillers. Prince Frederick Charles had taken steps to destroy the communications in the valley of the Moselle, thereby fully acting up to the spirit of Moltke's intentions. The Prince had witnessed the battle and remained near the scene till the fight had completely died away, and at 8.30 P.M. had issued suitable orders in case anything occurred during the night. Owing to the great distance between St. Privat and

Gravelotte, the Prince's report did not reach Moltke on the battlefield, but only at Rézonville during the night. On the other hand, the Prince had received no further instructions from Moltke, and had fought the battle entirely independently. Splendidly supported by the Commander of the XIIth Corps, the glory of the victory of St. Privat must be awarded rather to Prince Frederick Charles than to Moltke. For though the orders of 10.30 prescribed the enveloping movement, they were issued on false premises, and the Prince knew how to fulfil Moltke's desires without any further assistance on finding that the actual conditions were different to the pre-supposed ones. His circumspection and calmness are as attractive as the clumsiness and misdirected energy of the Commander of the 1st Army are the reverse.

We know that at 5 A.M. on the 19th August the Commander of the IInd Army made arrangements to shut the French completely up in Metz and cut off all their communication with the exterior world. We see how thoroughly Moltke's idea of envelopment was grasped. The credit of forming this idea belongs to Moltke, and to Moltke alone; the credit for executing it is solely Prince Frederick Charles's. The victory at St. Privat led to the evacuation of Point-du-Jour. The 18th August, 1870, was the most eventful day in the life of the Prince. His victory released General von Steinmetz from a painful situation. This, however, only increased the feeling of irritability the latter had towards the former. In addition to the serious consideration of the relations between Moltke and Steinmetz, the relations between the latter and the Prince had to be considered. The result was that Steinmetz ceased to command the 1st Army. Steinmetz compiled a memoir relating to these conflicts which he desired should be published after the Emperor had perused it. The Emperor, however, was of opinion that such a publication would be inadvisable, and the General was too good a soldier not to look upon such an expression of opinion otherwise than in the light of an order. This is all the more creditable to Steinmetz, as the official account of the battle in many places heaps blame upon him where he was not to blame. The reader is referred to pages 16, 71, 103, 111 in the English translation of the official account.

The battle of Gravelotte-St. Privat was a strategical battle, and was practically won when the German Army had completed their wheel to the right. In spite of many slips, the movement succeeded, and Moltke was then in a position to choose his favourite form of attack, a frontal one, combined with an envelopment of one or both of the opponent's flanks. In this case he chose the latter, and though his intentions were not fully carried out, the action of the IInd Army was sufficient to ensure a brilliant strategical victory.

The tactics adopted by the 1st Army were, as has been shown, most indifferent. The troops slipped out of the hands of their natural leaders. It will be noticed that out of the 57 battalions which were engaged near Gravelotte, only four (the 72nd and one battalion of the 40th) battalions made a combined attack. On every other occasion we find that brigades, regiments, and battalions lost

all cohesion. The brave attempts made by separate companies to attack the French position were invariably beaten back.

The Germans, as they attempted to deploy from the road, were very much in the position of rabbits who are being bolted; they were shot down by the French with the greatest ease. The artillery of the VIIIth Corps was well handled, and the handling of the infantry of this corps compared favourably with the handling of the infantry of the VIIth and IIInd Corps. Though it is often impossible to preserve any distinct lines of demarcation for the action of separate corps, yet there was no reason for the 39th, belonging to the 27th Brigade, being mixed up with the 29th Brigade.

The reserve brigade, the 31st, was sent into action at the right moment. Its action was not as successful as Von Goeben had hoped it would be; that, however, was the fault of Steinmetz and Zastrow, who sent the cavalry and artillery in the same direction at the same time. All the other troops combined did not obtain a greater measure of success than the 15th Division. Though the reinforcement of that division by brigades is unusual, yet, under the circumstances of the case, it was difficult to avoid doing so. It was a mistake sending the 9th Hussars over the Mance Valley; the arrival of the fresh horses at that identical moment was a real piece of ill luck.

The crowding at and near St. Hubert, which took place from 5 P.M., was most faulty. The farm was not occupied in a sensible manner, and nowhere did the infantry establish themselves in a proper fire position. It was this latter error which led to all the subsequent reverses; nothing was done to rectify it, or even to minimize it; hence the Germans never obtained superiority of rifle fire over their opponents. It must have been known that no attack could hope to succeed until this superiority had been established, and yet company after company was sent forward, all of them with equal want of success. The losses incurred by the French 2nd Corps, which amounted to 62 Officers and 2,043 men killed and wounded, is a conclusive proof that this fire superiority never was established.

The sole reason for the repeated successes obtained by the French in their counter-attacks was that the Germans had not established themselves in any fire position; otherwise their infantry would not so repeatedly have been knocked out of time. These successful counter-attacks also teach us how small the defensive power of skirmishers becomes, when they consist only of the remnants of men who have been repulsed, and who have become played out by repeated and continued disconnected attacks. The moment that Steinmetz and Zastrow actively intervened in the course of the action, mistake followed mistake. Neither of them understood Moltke's orders, and both of them refrained from making any preparations for an attack from the only direction from which a decisive result was to be expected, namely, from the Bois de Vaux. Never before has the infantry of a corps been so scattered and broken up as that of the VIIth Corps. After the IIInd Corps had been placed at Steinmetz's disposal, the errors he committed were inconceivable. The orders he

issued for the attack form a strong contrast to the orders for pursuit issued a few hours previously. The consequences of the order were, that in a space of a square kilometre, 48 battalions were placed in the dark in front of the enemy's rifles, and without the support of their own guns. They had not established themselves in any fire position. In spite of all this, the hostile position might have been captured at that hour; nay, it should have been captured. If the high opinion people have of the German discipline is justified, why did not twenty-four fresh battalions attack energetically for a matter of three minutes, instead of remaining for eight hours, till the next morning, before the muzzles of the French rifles? The answer is simple. There was no energy left in them; and yet histories and other books prate of their heroic deeds, and of their go!

Both the artillery and infantry contributed to the capture of St. Hubert; it is due solely to the artillery that the Germans kept possession of the farm, for they never gave the French guns the opportunity of shelling the place. Had they been able to do so, the remnants of the 59th company gathered together at that spot would have scattered in all directions.

It will be noticed that the losses were severest among the infantry whose attacks failed. The losses of the four battalions of the 32nd Brigade, who made the only combined attack of the whole day, were, on the contrary, unimportant. The whole brigade only lost 7 Officers and 104 men. Under these circumstances one cannot exactly see that they had any sufficient reason to retire as they did. In the VIIth Corps the only regiments which suffered considerably were the 39th and 73rd. It is sufficient to consult the appendix in the official account to see that the action of the infantry of the VIIth Corps is hardly deserving of notice.

Moltke's greatest feat was the successful issue of the operations round Metz, which culminated in the battle of the 18th. The losses, which at Sedan were considerably less, the capitulation following immediately after the fight, together with the political consequences of the day, have all combined to lead even experts astray. A hundred intelligent laymen will mention Sedan for one who will mention Gravelotte-St. Privat. Moltke, however, thought differently. The imprisonment of Bazaine's army in Metz was the turning point of the whole war, everything else that occurred was but a sequel to the same.

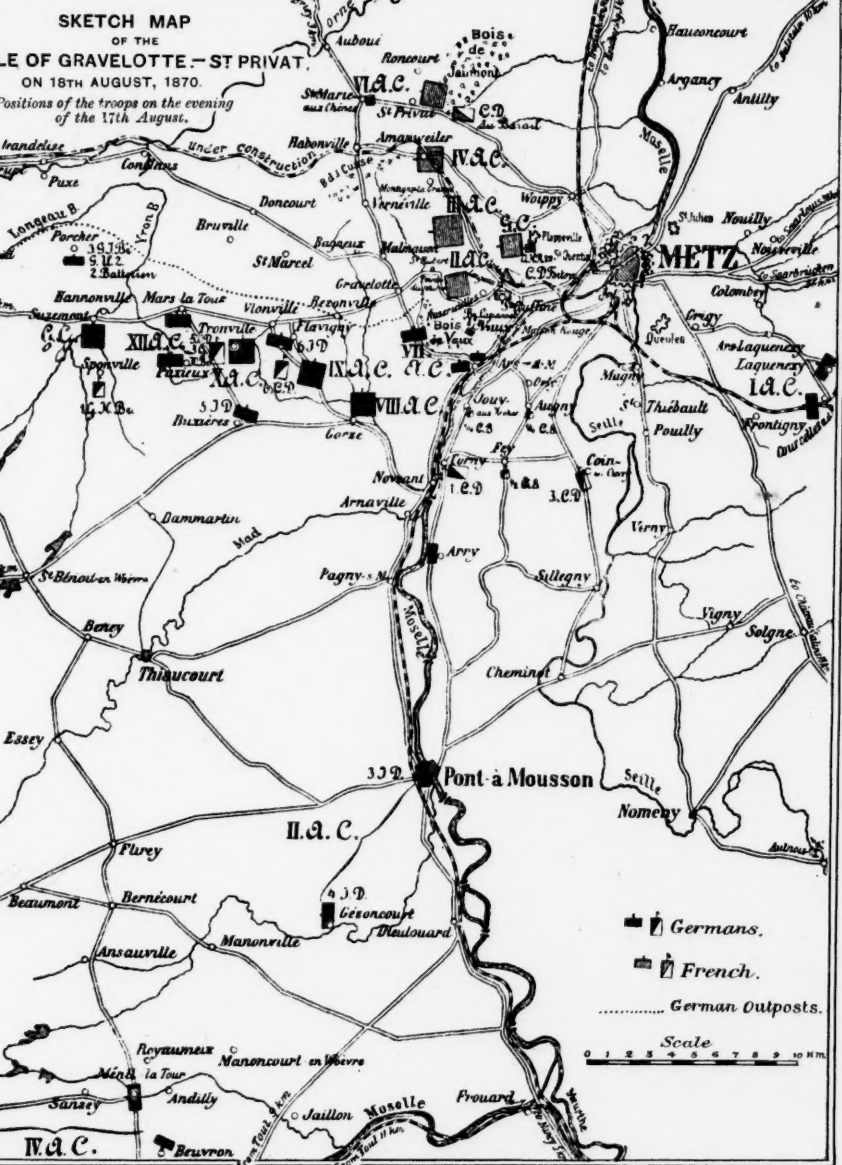
The balance of military and political power lay with Bazaine's army. Once it was disposed of the war was as good as won; it only became a question of time. The German nation has, owing to the streams of blood which flowed before Metz, never thoroughly known what occurred at these several battles. Mars-la-Tour and Gravelotte are not popular names in Germany, and will not become so, the sacrifice at which the victories were won being too great.

Up to the 18th August the great Moltke had to contend with totally different difficulties than those with which he had to contend between the 23rd August and the 2nd September. Previous to Sedan, as previous to Gravelotte, both armies quitted their line of



SKETCH
OF
BATTLE OF GRAVE
ON 18TH AUGUST
Positions of the troops
of the 17th





advance, wheeled to the north, and were eventually thrown in an easterly direction against their opponent. All the circumstances were more favourable during the second series of operations than during the first. Above all, during the operations which led to Sedan, Moltke was working with two Generals who understood him, and who endeavoured to anticipate his wishes, while previous to the 18th, one General had constantly to be kept in check, and the other had sometimes to be urged on. The latter richly atoned for any error he may have committed by his conduct on the 18th; the former must, owing to his conduct at Gravelotte, be removed from the list of great Generals. Moltke's greatest deed is the Gravelotte-St. Privat campaign.

We have endeavoured to place before our readers Captain Hoenig's views on the battle under review. No mere epitome can, however, do them full justice; it is necessary to study his book. It may occur to those who read it that Captain Hoenig at times exaggerates, or uses needlessly strong expressions, and also that he constantly repeats himself. We should, however, remember that an advocate is always privileged to use stronger expressions than a judge, and even to remind the jury at times of facts which he fears may possibly have escaped their notice. Such is Captain Hoenig's position; the judge and jury are the military public for whom he publishes his works, and he may rest assured that their verdict will not be unfavourable to the views he advocates.

A SHORT ACCOUNT OF THE FRENCH MARINE INFANTRY.

Compiled by Captain H. D. DRAKE, R.M.A., D.A.A.G., from "L'Infanterie de Marine," by M. G. DE SINGLY, Assistant Secretary in the Department of the Navy.

Historical Résumé.

In the year 1669 the Naval Department was formed, and on 20th December of that year a Decree was passed sanctioning the formation of two regiments of infantry for service exclusively at the military ports and on board ship. In 1671 these two regiments passed under the control of the War Department. In 1685, however, the Minister of Marine re-established an infantry corps designed specially for service in the Colonies, on board ship, and at the military ports. Various designations were assigned to this corps, as has been the case in our own Marine Service,¹ and in the course of two centuries, these troops were on six different occasions transferred to the War Department. But superior authority did not hesitate to place them again under the Naval Department, under which they have remained since 1831. In the year 1838 it received the name of Marine Infantry, and since this time it has developed in proportion to the extension of the French Colonial Empire. The annexation or extension of the Colonies of Tahiti, Cochin China, New Caledonia, Senegal, &c., the occupation of Tonkin, Annam, Cambodia, and of Madagascar, are the principal causes which have conduced to the augmentation of the Marine Infantry, and to the formation of the various Colonial corps hereafter described, the permanent staffs of which are furnished by the marine forces. The Marine Infantry consists of 17 regiments, 4 battalions, and 13 detachments, comprising a total of 181 companies of marines, and 76 companies of special and native troops. From 1838 to the present time there have been very few years during some part of which the Marine Infantry have not been called upon to take part in expeditions or wars. In the Franco-German War of 1870-71 the Marine Infantry formed a portion of the XIIth Army Corps, and the heroic defence of Bazeilles, in which they took a conspicuous part, will be remembered by all students of military history. At the present time the Senegal Rifles, under the command of Colonel Dodds, are doing good service at Dahomey, and in the recent operations in Tonkin, Annam, Formosa, Madagascar, and Upper Senegal, they have well upheld the traditions of the corps.

¹ Free naval companies, 1690; Royal Marine Corps, 1772; regiments for service in the American Colonies, 1772; Royal Corps of Marine Infantry, 1774-1822; naval regiments, 1831.

GENERAL ORGANIZATION.

Duties and Composition of the Marine Infantry.

Rôle of the Marine Infantry.—To the Marine Infantry is assigned garrison duty in the military ports, Colonies, and Protectorates (Algeria and Tunis excepted). It takes part in European Wars, and in maritime or other expeditions, and may be called upon to form detachments on board ship.

Composition.—The corps is composed of—

1. A general staff.
2. The personnel of the Marine Infantry.
3. The permanent staffs of infantry troops special to the maritime army.

General Staff.—The general staff of the arm comprises :

- a. Three Lieutenant-Generals and five Major-Generals ; Officers of every rank are attached to the Staff, and are seconded in their respective units, while temporarily occupying positions the pay of which is provided for by the Estimates.
- b. The Commander-in-Chief of the troops in Indo-China.
- c. The Military Commandant, and Majors of the troops in the Colonies.
- d. The Officers attached to the Ministry of Marine.
- e. The Officers attached to the Staff of Generals of marine troops.
- f. The Officers employed in Senegal.
- g. Officers attached to Governors.
- h. Officers employed on Courts-Martial in penitentiary Colonies (Guiana and New Caledonia).

The Marine Infantry comprises—

1. *In France.*

Eight regiments, two each at Cherbourg, Brest, Rochefort, and Toulon.

2. *In Colonies.*

Four regiments, of which three are in Indo-China and one in New Caledonia.

Four battalions, one in Senegal, one at Réunion, one at Diego-Suarez (otherwise British Sound, N. Madagascar), one in Martinique ; two companies in Guiana, one each at Guadaloupe and Tahiti, and detachments at Obock (near Perim, on the African mainland) and Tananarivo.

Permanent Staffs of Special and Native Corps.

The Marine Infantry comprises, besides its regimental cadres, the number of Officers, sergeants, corporals, privates, and buglers neces-

sary to hold the appointments and provide the reliefs of the permanent staffs of the corps enumerated below :

1. The regiment of Senegal Rifles..	12 companies.
2. The regiment of Annam Rifles..	12 „
3. Three regiments Tonkin Rifles..	48 „
4. Sepoy Corps	1 company.
5. Gaboon Rifles	1 „
6. Sakalave Rifles	1 „
7. Disciplinary Company	1 „
8. Colonial Disciplinary Corps	2 companies and 1 section.
9. Depôt of the Disciplinary Corps at Oleron.	

The provisions of the laws, decrees, and instructions relative to the Army are applicable to soldiers of all ranks of the Marine Infantry according to the decision of the Minister of Marine.

General Staff. Duties of Inspectors-General. Technical Committee.

Inspector-General.—The senior Lieutenant-General of the first section of the General Staff of the Marine Infantry is the Inspector-General of the arm.

The other Lieutenant-Generals and Major-Generals are employed either as Assistant Inspectors-General, or according to the requirements of the military service of the Naval Department in France and in the Colonies.

In 1890 the composition of the first section of the General Staff of the Marine Infantry was as follows :—

Lieutenant-Generals, 3 : 1 Inspector-General, 2 Assistant Inspectors-General.

Major-Generals, 5 : 1 Commanding-in-Chief the troops in Indo-China, 1 Commanding the 1st Brigade in Indo-China, 3 Assistant Inspectors-General.

Duties of the Inspectors-General.—The Inspector-General and the Assistant Inspectors-General in France assemble, after the inspections, to draw up—

1. A list of each rank in order of merit of all Officers selected for promotion by the competent authorities.

2. A list for each corps, in order of merit, of all Officers, non-commissioned officers, and soldiers selected for admission to, or advancement in, the order of the Legion of Honour, and for the military medal.

This list is also drawn up in order of merit for the whole arm.

3. The general list of Officers nominated for special employment ; in case of an equality of votes in determining the order of preference the President has a casting vote. The general list of Officers proposed for promotion, as well as the lists rendered by each In-

spector-General, are forwarded to the Minister for the purpose of being submitted to the Board of Admiralty in due course. The Inspector-General and the General Officers of the Marine Infantry employed at Paris are summoned to assist in the work of the Board of Admiralty in framing the promotion tables of the Marine Infantry.

The other duties of the Inspector-General of the Marine Infantry and of the Assistant Inspectors-General are determined by the Minister of Marine.

They are regulated by a Ministerial Decree of 9th July, 1874, in the following manner:—

The Inspector-General and Assistant Inspectors-General have no direct command over the personnel of their arm, except that which is delegated to them by the Minister while they are exercising their functions, and at the time of their actual presence in the localities where the troops they are inspecting are stationed. Beyond these functions the Inspector-General is authorized to correspond with Officers commanding regiments in France and in the Colonies through Maritime Prefects and Colonial Governors, in order that he may keep himself informed of the different details which affect the Marine Service. He receives to this end, through the Minister, periodical states on which are set forth anything which has happened since the last state was rendered, and all that concerns the Service, the police, and the discipline of the troops.

The Inspector-General in his correspondence can in no case convey any order to Commanders of regiments or detachments, either directly or through the local authorities; when several detachments are formed into a regiment, the Inspector-General corresponds with the Officer commanding the whole. The Inspector-General may suggest to the Minister anything having for its object the introduction of improvements into the Service generally, and may request that any laws, decrees, and instructions governing the land forces may be applied to all ranks of the Marine Infantry.

The Inspector-General is consulted by the Directors of the Central Administration—

1. On questions of organization, administration, and accounts, not provided for by the regulations.
2. On changes and improvements to be introduced into the equipment and arming of the troops.
3. On modifications to be introduced into existing regulations when they concern the special organization of the Marine Infantry.
4. On exchanges between Officers of the arm with those of the infantry of the Line.
5. On requests for exchanges, for personal convenience, between Officers of the Marine Infantry whenever the Minister does not exercise the special rights conferred upon him.
6. On requests by Officers for permission to marry.

The Assistant Inspectors-General represent the Inspector-General when absent or when prevented by any cause from attending. The Minister may consult them separately on all questions concerning which he desires to know their personal opinion.

At the commencement of each year, having conferred with the Assistant Inspectors-General on returning from their tour of inspection, and having received the combined reports of the Inspectors-General in the Colonies, the Inspector-General forwards to the Minister a general report on the whole arm.

Annual Inspections.—These are carried out yearly by General Officers of the arm in France, and in the Colonies and Protectorates.

In detachments beyond the seas, where these duties are not performed by Generals of the arm, they may be performed by other military Officers by special authority of the Minister of Marine.

Technical Committee.—This is assembled in Paris, and is formed of the Inspectors-General and Assistant Inspectors-General of the Marine Artillery and Infantry. The Committee is consultative. It is assembled by superior authority, or may take the initiative itself for the consideration of the following questions :—

- a.¹ Preparation for the mobilization of regiments or portions of regiments of Marine Infantry in France or in the Colonies.
- b.¹ Preparation of plans of mobilization of military ports.
- c. Effect to be given to the reports of Vice-Admirals Commanding-in-Chief, Maritime Prefects, and Inspectors-General on that which concerns the instruction of the troops.
- d. The application to the marine forces of regulations relating to instruction which are in force in the War Department.
- e. Improvements to be introduced into the organization of the troops in France and in the Colonies.

The proposals of the Technical Committee are transmitted to the Rear-Admiral whose duty it is to lay them before the Minister, and take his instructions concerning them.

A Colonel or Lieutenant-Colonel of Marine Infantry performs the duty of Secretary of the Technical Committee, and has a voice in its deliberations.

In case of necessity he is replaced by the Orderly Officer of the President of the Committee.

An Officer of Marine Infantry of the rank of Captain is detached to Paris to serve as assistant to the Secretary of the Committee.

General Officers.—Lieutenant-Generals and Major-Generals are divided into two sections, of which the first comprises those serving and awaiting employment; the second forms the reserve. In peacetime active employment is given exclusively to the General Officers forming the first section. In time of war the General Officers of the second section may be called upon in case of necessity. General Officers who, on account of ill health duly certified, are incapable of continuing in active service may be relegated to the second section in anticipation, either by Decree of the President of the Republic or at their own request. These Officers may be recalled to active service when the causes which actuated their removal to the second section have ceased to exist. The time passed by these Officers in the second

¹ The General Staff of the Minister is, however, charged with the centralization of these questions.

section is reckoned as service for half-pay and retirement only. Whatever may be the Colonial duties performed by General Officers of Marine Infantry, their place on the foreign service roster is determined according to the date of their last return to France, either in their present rank or in the rank of Colonel.

Lieutenant-Generals at the age of sixty-five, and Major-Generals at the age of sixty-two, cease to belong to the first section and pass to the second. By virtue of a Decree of the President of the Republic, General Officers may be retained in the first section, irrespective of the age limit, and may be employed in time of peace up to seventy years of age if they have rendered distinguished services before the enemy in fulfilling with credit one of the following functions:—

1. Commanding-in-Chief an army composed of several army corps.

2. Commanding-in-Chief an army corps composed of several divisions of different arms.

3. Major-General Commanding-in-Chief the artillery or the engineers of an army composed of several army corps.

Lieutenant-Generals included in the above-mentioned categories who are provided with employment in time of peace will form part of the first section of the General Staff; those unemployed will be placed on the supernumerary list.

Organization of the Troops in France and in the Colonies.

A battalion consists of four companies. The 1st, 2nd, 3rd, 5th, and 6th Regiments consist of three and a half battalions, the 4th Regiment consists of four and a half battalions, the 7th Regiment of three, and the 8th regiment of four battalions. The last company of the last battalion of each of the eight regiments is permanently utilized as the company of instruction. The "Dépôt des Isolés" is attached to the 4th Regiment at Toulon.

All companies of Marine Infantry stationed in France have a fixed establishment of 3 Officers and 100 non-commissioned officers and men, viz. :—

1 Captain
1 Lieutenant
1 Sub-Lieutenant

3 Officers.

1 sergeant-major
1 senior sergeant
5 sergeants
1 quartermaster-sergeant
10 corporals
2 buglers
80 privates

100 non-commissioned officers and men.

Companies serving in the Colonies are composed each of 3 Officers and 150 non-commissioned officers and men, viz. :—

1	Captain
1	Lieutenant
1	Sub-Lieutenant
<hr/>	
3	Officers.
1	sergeant-major
1	senior sergeant
7	sergeants
1	quartermaster-sergeant
1	quartermaster-corporal
12	corporals
3	buglers
124	privates
<hr/>	
150	non-commissioned officers and men.

Paris Battalions.—The 1st, 2nd, 3rd, and 5th Regiments furnish each two companies from their 1st battalions, which form two separate battalions detached to Paris. The companies number 3 Officers and 125 non-commissioned officers and men each. These two battalions are under the Military Governor of Paris for all matters of discipline, interior economy, &c.

Posting of Officers.—The Minister posts the Officers to the different units. Nevertheless, the Maritime Prefects, on the suggestion of the Commanding Officers, and subject to the approval of the Minister, nominate the Captains and subordinate Officers of the two regiments stationed in each port. The Company Commanders of the three 1st battalions of each regiment are chosen as much as possible from among the Officers actually present, or, failing a sufficient number of Officers being present, from among those who have just returned from the Colonies and are about to rejoin their Corps. Officers who for urgent reasons desire to obtain an appointment in the Capital must apply in the prescribed manner through the Vice-Admirals Commanding-in-Chief, the Maritime Prefects, and the Officers Commanding troops, who transmit the applications of these Officers to the Minister with a notification from their Commanding Officers of their concurrence. These applications are only acceded to if the interests of the Service permit.

Subject to the approval of the Minister, the Maritime Prefect arranges the transfer of Officers from regiment to regiment at the same port.

Posting of Men to Companies.—The principle of the allotment of men to companies is that each company should comprise a fairly equal number of men belonging to the different classes of recruiting or of voluntarily enlisted men who terminate their period of engagement at the same time. Moreover in France each of the companies of the three 1st battalions of each regiment must be constantly main-

tained, so far as the supply of men permits, at normal peace strength. The other companies receive the absentees and non-available men (men absent on sick furlough, in hospital, &c.). The remainder of the absentees is distributed equally among the three 1st battalions.

9th, 10th, and 11th Regiments stationed in Indo-China.—The battalions of Marine Infantry in garrison in Indo-China are grouped into three regiments under the command of a Colonel or Lieutenant-Colonel. These regiments consist of three battalions of four companies, each of 150 men, and are distributed as follows:—

The 9th Regiment at Tonkin.	
The 10th " Annam.	
The 11th " Cochin China.	

The Administrative Staff of each of these regiments is composed as follows:—

The Commanding Officer as President.
The Second in Command.
The Senior Captain.
Two Company Captains.
The Paymaster (a Lieutenant) as secretary.
The Quartermaster (a Lieutenant).

These Officers are charged with all matters concerning the administration and accounts of the regiment.

The regiments in Indo-China entertain the requests for permission to re-engage put forward by the non-commissioned Officers according to the rules followed by the regiments in France. The Administrative Staffs of the three regiments in Indo-China forward their demands for drafts to the metropolitan regiments of Marine Infantry charged with their relief; these in turn communicate with the Minister through the Maritime authority.

The General Commanding-in-Chief the troops deals with the reduction and punishment of non-commissioned officers serving in the regiments in Indo-China. The procedure in the case of re-engagement, reduction, punishment, &c., followed for non-commissioned officers in Indo-China is applicable to the non-commissioned officers of Native troops (the Annam and Tonkin Rifles). Each regiment in Indo-China is entitled to certain annual allowances for regimental schools and libraries, which are fixed as follows:—

1. Fencing school.....	1,128 f. }	In Cochin China, Annam, and Tonkin.
2. Gymnasium.....	168 " }	
3. School of musketry.....	276 " }	
4. Swimming, dancing, and buglers' schools.....	100 " }	
5. Schools and regimental libraries...	2,184 " }	

As regards clothing, the regiments in Indo-China forward their demands to the Clothing Department.

Necessaries are arranged for regimentally as much as possible.

If this cannot be done in the case of certain articles, the corps forward their demands to the Minister, who takes steps to provide them.

12th (New Caledonia) Regiment. Battalions, Companies, or Detachments in the other Colonies.—The relationship between these corps and the regiments at home is analogous to that of the latter with the regiments in Indo-China, and conversely.

Organization and Functions of Companies of Instruction.

Constitution.—In order to accelerate as much as possible the practical and theoretical instruction of young soldiers capable of advancement, a company, called a company of instruction, is detailed permanently in each of the regiments of Marine Infantry in France. The company receives, one month at least after their arrival in the corps—

I. The most intelligent and vigorous young men best fitted for command, whether called up or voluntarily enlisted, who have undergone an examination as described below.

All young soldiers of a contingent, together with voluntarily enlisted men, three or four days after their arrival, undergo an examination to enable their degree of knowledge to be determined.

The examination consists of—

1. Copying a set piece.
2. A few lines of dictation.
3. The four rules of arithmetic.

II. Young soldiers who not having been accepted after their first month of service have since given proofs of intelligence and aptitude for command.

Young soldiers who have passed the above examination are especially watched by the Officers and by all ranks of their company, and those among them who, during one month at least, have shown themselves worthy of advancement, are admitted to the company of instruction, by order of the Colonel, on the recommendation of the Captain of the company.

The strength of the companies is not limited; it should be at all times sufficiently high to satisfy all the obligations of the regiment at home and in the Colonies.

Establishment of Companies of Instruction.—The Officers of the companies of instruction are nominated by the Minister who selects them from special lists kept by the Inspectors-General.

Selections are made principally from the Officers who have recently returned from the Colonies, in order that changes may be made as seldom as possible. The selected Officers give all their attention to the company, and are excused garrison duty. When they reach the top of the roster for Colonial service they may, on the recommendation of the Commanding Officer, be retained in their company in order to complete a term of three years in it. If an Officer quits the regiment on promotion or for any other cause, the fact is reported to the Minister, who, failing a candidate nominated by the Inspector-General, selects an Officer from a list kept for this purpose by the

Commanding Officer. Non-commissioned officers, re-engaged if possible, chosen from the best instructors, and who are desirable in every way, are attached to the company. They must remain a year, and are not removed except for incompetence, misconduct, or on promotion. They, like the Officers, are exempt from all other service in the regiment, and only mount guard with the men they instruct.

The duty Officers and non-commissioned officers remain only one year with the company, but to foster *esprit de corps*, they are relieved in succession and not in a body.

The composition of the staff of each company of instruction is fixed as follows:—

1 Captain, 1 Lieutenant, 1 Sub-Lieutenant, 1 sergeant-major, 1 senior sergeant, 8 sergeants, 1 quartermaster-sergeant, 16 corporals.

Course of Instruction.—The Officer Commanding the company is entirely responsible for the instruction of his company. He endeavours to give the students a complete military education.

The number of non-commissioned officer instructors enables him to divide his company into as many classes as are necessitated by the aptitude and intelligence of the students and their date of joining. The classes are so arranged that at the end of four months the students have completed the course of instruction summarized below (p. 1411).

At the end of three months the most intelligent students can be utilized in instructing the elementary classes. On the first of each month the Captain renders a detailed return to the Colonel showing the work done during the past month by each class in the company.

Instruction of Students as Soldiers.—Individual instruction is given to the students with the greatest care, bearing in mind always that to make efficient instructors in the future, it is above all necessary to turn out smart soldiers who shall be examples and models as much by their bearing and conduct as by their skill at arms. Sufficient soldiers are attached to each company to do fatigues during the hours of instruction and to carry out the minor duties which are indispensable in each company. A great portion of the time is given to musketry. The students, two months after joining, take part in garrison duty at the rate of two guards per month. This duty is performed by portions of the company under their accustomed instructors, and serves as a practical demonstration during twenty-four hours of that which they have been taught in theory.

Field training is taught in all its branches. The students carry out, under conditions as nearly those of active warfare as possible, and in the neighbourhood of their garrison, the practical duties of camp and bivouac, each scheme lasting twenty-four hours.

In order to develop the activity and strength of the students to the utmost, in addition to the usual physical drill, which is taught them with particular care, they are exercised at gymnastics every other day under the superintendence of the sergeant-major. When the weather is favourable they are taught swimming. Fencing is taught them three times a week. For battalion drill, drill in extended order,

&c., requiring a larger body of men, the company of instruction is joined to the other companies of the regiment.

Training of the Students as Instructors.—The subjoined table shows the knowledge, both theoretical and practical, which the students must possess as instructors. They only commence to qualify as instructors in the different subjects when their training in each of them as soldiers is complete. Theoretical study does not commence until they are familiar with the practical movements in each part of the instruction. Giving detail for the various drills and exercises in the class rooms, or preferably out of doors, is made as practical as possible.

The student instructor, standing before one or more students representing men to be instructed, himself performs what is prescribed by the instructor. He recites, in a commanding voice, the detail of the movement, commencing with the words, "At the Order," then sees it carried out, and corrects mistakes if necessary. The movements of the rifle exercise are learnt with the weapon in the hands, each movement being performed as the detail for it is given. This procedure facilitates instruction, combining as it does a knowledge of drill and detail, and at the same time imparts a good word of command. It enables the students to understand what they learn and recite, and is a powerful aid in a study which is unpleasant at its commencement, and which often rebuffs and discourages them. It only remains to them to acquire the habit of command, the *coup d'œil* necessary to direct a squad under all circumstances of ground, and facility in bringing to the notice of the men quickly and clearly the principles they have already learnt theoretically. The duties of corporal of the guard are taught at the guard room.

Classification.

At the end of each month the students who have finished the period of four months with the company, undergo an examination before a Board detailed by the Commanding Officer of the regiment, and composed as follows:—

A Lieutenant-Colonel, president, two Captains, one of whom is the Captain of the company of instruction, two Lieutenants or Sub-Lieutenants, one of whom is taken from the company of instruction.

As a result of this examination, the Board arranges a classification of the pupils, taking the mean of the marks allotted by each of the members. Marks are given according to the following scale:—

Very bad indeed.....	0
Very bad.....	1
Bad.....	2, 3, 4
Fair.....	5, 6, 7, 8
Pretty good.....	9, 10, 11, 12
Good.....	13, 14, 15
Very good.....	16, 17, 18
Excellent.....	19, 20

Co-efficients are assigned to the different subjects according to their importance (p. 1412), and the mean of the marks allotted by the Board for each subject multiplied by the corresponding coefficient, when totalled, serves to establish the student's classification. Students obtaining a mean of less than twelve points are rejected for inefficiency, or they may, if recommended by the Captain, be retained for an additional month with the company. This indulgence is only accorded once. At the end of each monthly classification, the Board address a report to the Commanding Officer on the state of efficiency attained by the pupils. The soldiers who pass are nominated as early as possible "first class" soldiers, and are distributed as lance-corporals among the companies in which vacancies of the lowest rank either exist, or are about to occur within a short time. As far as possible, the students are posted to companies other than those they joined on enlistment. A month after joining the service companies, they receive from their Captain a certificate showing the manner in which they have served and their aptitude for command. This certificate is combined with that from the Captain of the company of instruction to form a mean certificate of efficiency from which the Lieutenant-Colonel compiles a list showing the relative efficiency of all the "student" corporals of his battalion. This final classification is made known in orders, and from this list alone promotions are made.

A certain number of these student corporals form part of each detachment sent to the Colonies. Students are only retained in the company of instruction on showing at all times proofs of good conduct, industry, and aptitude, and the Officers Commanding regiments can remove them for misconduct, idleness, or inefficiency on the proposition of the Captain of the company of instruction, or of the Board of Examination, after conferring with the Battalion Commander and second in command. A certificate for each man, showing the date of his joining the company of instruction, and the different classifications obtained during the year, is placed in each man's pocket ledger. The fact of a student being removed for misconduct, inefficiency, or any other cause is shown on the certificate. In case of re-admission as a student either in France or in the Colonies, a second certificate is furnished.

Regiments, Battalions, and Companies of Marine Infantry in the Colonies.

In order that the marine troops in the colonies may supply the vacancies occurring in the lower ranks, Commanding Officers organize, according to the importance of the detachment placed under their orders, a company, a half company, or a section on the same lines as a company of instruction in France. The routine of these companies is followed entirely, except that the Officers, non-commissioned officers, and students continue to be borne on the strength of their respective companies.

They have no special quarters, but live with their companies;

Commanding Officers may, however, introduce any modification they may consider necessary. The results of the instruction given in the Colonies are recorded on a certificate in the pocket ledger as described above. The Officers of the instructional units and the Board of Examination are arranged as nearly as possible as they would be in France, and are selected by the Officer Commanding the troops.

The personnel of the instructional unit cannot be detained in the Colony beyond the prescribed period.

Native Troops.—The same system is followed as nearly as possible in the native regiments, the subjects to be taught are determined by the Officer Commanding the troops on the proposition of the Officer Commanding the native regiment.

KNOWLEDGE TO BE POSSESSED BY CORPORALS, WHICH KNOWLEDGE THEY MUST BE ABLE TO IMPART.

I. *Manœuvre.*

Duties of a soldier.

Duties of guides.

Position and duties of corporals.

II. *Musketry.*

Stripping and putting together the rifle in use.

Names of all parts of the rifle and cartridge.

Zones of fire.

III. *Gymnastics.*

Physical drill.

Gymnasium.

IV. *Field Works.*

Names of tools, portable tools, and engineering modelling tools.

Method of using the above tools.

Rifle pits and shelter trenches.

Application of field fortification to the defence of hedges, walls, ditches, &c.

V. *Interior Economy.*

All that concerns soldiers and corporals in the Regulations.

VI. *Duties in Garrison.*

All that concerns soldiers and corporals in the Regulations.

VII. *Duties in the Field.*

General Instruction.

Elementary exercises in reconnaissance and surveying.

Part I.—1. General principles.

2. Sentry duty.

3. Piquets, and posts of like nature.

4. Detached posts.

5. Patrols and rounds.

6. Advanced posts.

Part II.—1. General principles.

2. Order of march of a company of infantry.

Composition and distance of the different portions.

Duties of point and head of advanced guard.

Measures for security on halting.

Rear guard.

Retreats.

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- Part III.—1. Definitions.
2. Cantonments.
3. Bivouacs.

VIII. Use of Pocket Ledger.

IX. Military obligations of Men on Furlough and of Reserve Men.

Instruction concerning administration and mobilization of Reserve men.

X. Company Accounts.

This portion is only taught to men capable of performing Pay Office duties.

XI. Elementary Course of Map Reading.

Conventional signs.

Table of Co-efficients.

Duties of the soldier (theoretical and practical)	8
Musketry instruction (theoretical and practical)	5
Physical drill	4
Field works	4
Interior economy	3
Duties in garrison	3
Duties in the field	5
General manner of performing duty and aptitude for command	12
Conduct	7
General bearing	3
Signalling	1
Company accounts	1

Form of Certificate.

_____ Regiment of Marine Infantry. Corps stationed at _____.

Joined company of instruction _____ (date) _____.

Obtained _____ (No. of Marks) _____.

Classification.—Order of merit, _____ out of _____ students.

Final Classification.—Order of merit, _____ out of _____ students.

Place _____ Date _____.

A. B.,
Colonel.

"Dépôt des Isolés," at Toulon.

This dépôt forms a company attached to the 4th Regiment of Marine Infantry.

The Permanent Staff is organized as follows:—

- 1 Captain who acts as paymaster.
- 1 Lieutenant or Sub-Lieutenant.
- 1 sergeant-major.
- 1 senior sergeant.
- 1 quartermaster-sergeant.
- 3 sergeants.
- 3 corporals.
- 1 bugler.
- 10 privates.

The Officers are nominated by the Minister. The Captain is chosen from among the Officers of this rank of tried administrative capacity.

The non-commissioned officers, buglers, and privates are chosen by the Colonel of the 4th Regiment. Officers and men leaving the dépôt for a period exceeding thirty days are replaced, otherwise they remain attached to it for one year. The Captain is under the command of the Colonel of the 4th Regiment for all matters connected with the interior economy, discipline, and instruction of the company. However, to avoid delay, he may communicate direct with the Major-General, informing the Colonel that he has done so. The Lieutenant or Sub-Lieutenant acts as second in command, and fulfils the duties of Adjutant in the barracks occupied by the *isolés*. One of the three sergeants is baggage-master, and one of the corporals acts as assistant to the Quartermaster. The men of the dépôt are accommodated in barracks set apart for them by the superior local authority, who takes care to ensure the well-being of the men passing through—convalescents and others. For this purpose the quarters are provided with regulation bedding and furniture. A Naval Medical Officer is attached to the dépôt.

Although forming a company belonging directly to the 4th Regiment, the "Dépôt des Isolés" constitutes a secondary portion of this regiment in the matter of payment and administration.

Soldiers of regiments of Marine Infantry, other than the 4th, together with men belonging to special corps, are attached to the dépôt for pay, allowances, and rations. Men belonging to the Annam rifles are arranged for by special regulations. Arms, clothing, equipment, and necessaries are furnished by the 4th Regiment, as they become necessary. Repairs of all kinds to arms and equipment are carried out in the workshops of the 4th Regiment at the current rates. The following allowances are granted by regulation:—

To the Captain-Paymaster, for purchase of books, office allowance, rent of office, &c., 1,710 francs. To the baggage-master 50 centimes per diem.

NATIVE AND SPECIAL CORPS.

Senegal Rifles.

A body of native infantry is kept up in Senegal, and forms a military unit which contributes to the defence and internal security of the Colony. It originally consisted of ten companies forming two battalions, but in August, 1890, the number of companies was increased to twelve, forming three battalions.

The staff of the regiment comprises —

Lieutenant-Colonel Commanding	1
Majors	2
Senior Captain	1
Lieutenant (Paymaster)	1
Lieutenant (Quartermaster)	1
Sub-Lieutenant (Assistant to Paymaster)	1
Assistant Surgeons	2

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Nine companies garrison Senegal, the tenth is at Porto Novo. The strength of the Senegal companies is:—

		<i>Officers.</i>	
European.			Native.
Captain.....	1	Lieutenant or Sub-Lieutenant	1
Lieutenant.....	1	(There are 2 native Lieutenants and 7 native Sub-Lieutenants in the regiment.)	
Sub-Lieutenant.....	1		

Non-commissioned Officers and Men.

European.		Native.	
Sergeant-major.....	1	Sergeants.....	4
Quartermaster-sergeant.....	1	Corporals.....	8
*Sergeants.....	6	Bugler.....	1
Buglers.....	3	Riflemen.....	120
		Boys.....	2

The Porto Novo Company comprises—

		<i>Officers.</i>	
European.			Native.
Captains.....	1		Nil.
Lieutenants or Sub-Lieutenants.....	2		

Non-commissioned Officers and Men.

European.		Native.	
Sergeant-major.....	1	Sergeants.....	3
Quartermaster-sergeant.....	1	Corporals.....	6
Sergeants.....	4	Bugler.....	1
Buglers.....	2	Riflemen.....	81
		Boy.....	1

The strength of this company may be increased by the Minister of Marine to that of the Senegal companies.

At Medine, about 300 miles up the Senegal river, there is a clothing dépôt in charge of a Lieutenant. The European soldiers are taken from the Marine Infantry, the non-commissioned officers are, when possible, selected from among those who have re-engaged, and are furnished exclusively by the two regiments stationed at Brest.

Europeans remain two years at Senegal, and one year at Porto Novo, exclusive of the time occupied in going and returning. The French Officers and non-commissioned officers always command natives of corresponding rank. The command of a company, even though it be only temporary, must always be exercised by a European Officer. Native Officers draw the same pay and allowances as European Officers of corresponding ranks. Recruiting in the corps is

* The Company of Instruction has ten sergeants.

carried out by means of voluntary enlistment and by re-engagement among the Senegal natives. The regulations concerning discipline, jurisdiction, &c., are the same as those obtaining in the Marine Service. The native troops are treated in the same manner as soldiers of the Marine Infantry in the matter of the Legion of Honour and military medal, and they draw the allowances which these distinctions carry. They receive pensions and half-pay in cases provided for by regulation. Administrative control is exercised by the Colonial Commissariat, questions of organization, promotion, police, discipline, uniform, and armament are decided by the Minister.

Source of Supply of Officers, Non-commissioned Officers, and Men of the European Permanent Staff.

As mentioned above, the European Officers, non-commissioned officers, and men are selected from the Marine Infantry, the non-commissioned officers being chosen as much as possible from among those who have re-engaged, belonging to the regiments stationed at Brest. The Officers are nominated by the Minister of Marine, and the non-commissioned officers and men by the Vice-Admiral Commanding-in-Chief, who details them equally from the two Brest regiments. They remain on the strength of the Marine forces, and are subject to the regulations of that service, except in the matter of pay and clothing. Should the Officer commanding the troops in Senegal consider it expedient, he may order any interchange of non-commissioned officers between the Senegal Rifles and the Marine Infantry stationed in Senegal.

Recruiting Natives.—The native Officers are selected from native non-commissioned officers recommended for promotion, and are nominated by the President of the Republic.

Recruiting of the riflemen is carried out—

1. By voluntary enlistment of natives of Senegambia.
2. By re-engagement of time-expired riflemen, who wish to remain in the Service.

Voluntary enlistment is for two, four, or six years, and carries bounties of 80, 180, and 300 francs, payable on attestation. The period of re-engagement is for two, four, or six years, and carries the same bounties as are awarded for voluntary enlistment; half is payable at the time of re-engaging, and the remainder when the period of re-engagement commences.

The conditions of enlistment and re-engagement are explained to the recruit and to two native witnesses, by an interpreter, in the presence of a Captain.

Creoles of Martinique, Guadeloupe, and Guiana, as well as Algerians, may not now enlist in the Senegal Rifles, but any now serving may re-engage if the Officer Commanding considers them efficient. Every non-commissioned officer and rifleman receives a regimental number on being posted to a company, and is furnished

with a small book, showing a statement of his accounts, and the amount of equipment, &c., supplied to him.

Pay and Allowances.—The Officers, both European and native, are entitled to the same pay, marching money, and field allowances as the Marine Infantry battalions stationed in the Colony. European non-commissioned officers and men are entitled to the same pay and marching money as the Marine Infantry, sergeant-majors drawing field allowances according to the same scale, in addition. Native non-commissioned officers and men draw half-pay when on furlough or in hospital. They draw no pay when absent without leave, in a state of desertion, or when absent over furlough without due cause. Full pay is given to European soldiers and to re-engaged natives on all occasions of absence with leave.

Rations.—European Officers, non-commissioned officers, and men draw the same rations as those allotted to the European troops. Natives are entitled to a daily allowance in lieu of rations of 1 f. for non-commissioned officers, and 80 c. for men and boys. At any time, on the advice of the military authorities, the Governor of the Colony may stop this allowance, and give the men their rations in kind. Native non-commissioned officers receive the same rations as Europeans of the same rank; riflemen and boys receive the same rations as European privates, but without wine. Mounted Officers receive forage in kind.

Payment.—Pay and money allowances are drawn monthly in arrears; the men are paid by the company Commanders every five days in arrear. Commanders of battalions, and detachments on their own responsibility, pay all allowances due to those under their command.

Clothing.—Every native receives, at the time of enlistment, a suit of clothing, which is kept up by a daily stoppage, due at all times when pay is drawn. The object of this arrangement is to provide the soldier with kit and necessaries, and to effect repairs in equipment and arms which are the property of the State, when these repairs are necessitated by the fault of the man.

General Maintenance Fund.—This fund, kept up in the Senegal Rifles, forms a common purse, to defray corps expenses. The principal expenses which it defrays are—

1. Band expenses.
2. Lighting the interior of the barracks, and such outside lighting as is not provided for otherwise. Illumination for the national fête.
3. Keeping up clothing and equipment, and hair cutting.
4. Shoeing and veterinary attendance for horses of mounted Officers, the property of the State, and for bât horses.
5. Balancing deserters' accounts.
6. Starting and keeping up the mess of the European permanent Staff, regimental schools, libraries, and hospitals.

Uniform.—Europeans retain the clothing and equipment of the Marine Infantry.

Native Officers. Review order :

1. The *chéchia*.*
2. A light blue vest, of Arab pattern, braided and laced with gold. Sleeves open under the forearm, and fastened with buckles. The rank is shown by gold braid, forming a Hungarian knot.
3. A waistcoat, called "*sédria*," of Arab pattern, of light blue cloth, with yellow stripes on each side.

Drill Order.—Straight trousers, of white linen or blue flannel, instead of the peg-top trousers worn in review order. No ornaments. The rank stripes are in gold, placed round the sleeve. Boots are replaced by shoes, or laced half-boots. A common cap replaces the *chéchia* for daily use.

Native Riflemen.—In review order this consists of—

1. The *chéchia*.
2. A zouave jacket.
3. A frock of royal blue cloth, edged with yellow.
4. Royal blue trousers, with yellow stripe.
5. A broad yellow woollen girdle.
6. Shoes with white linen gaiters.

In drill order they wear a khakee frock, ornamented with a yellow stripe on the collar and on the sleeves, khakee trousers, of as small dimensions as are compatible with their oriental pattern.

Up country riflemen wear drill order only, and the daily stoppage towards the general maintenance fund is consequently reduced from 50 c. to 30 c. Men told off to serve up country ("*haute fleuve*") only take the *chéchia*, khakee frock, and trousers, and a blue cloth frock. All other articles of review order are kept packed in bales, in the clothing store at St. Louis (mouth of the Senegal river). The shoes and white gaiters are replaced by a pair of sandals. For wear during the cold nights, from December to March, riflemen serving up country draw a warm knitted jersey, at the expense of the general maintenance fund. This garment is worn under the blue cloth frock. Field service gaiters, of strong linen, are served out when necessary.

All clothing and equipment is marked with the regimental number of the owner.

All repairs of clothing and equipment are effected in the regimental workshops at a fixed tariff.

The camp and other equipment of native riflemen is the same as that of the Marine Infantry, but no havresack is provided. The 48 portable tools carried by a company of Marine Infantry are replaced by 2 picks, 4 shovels, 4 axes, 4 billhooks, and 2 saws. On the march, these tools are carried by the transport.

Arms.—European Officers, sergeant-majors, and senior sergeants carry the same arms as similar ranks in the Marine Infantry. Non-commissioned officers and riflemen, European and native, are armed

* A red cap, such as is worn by the French troops in Algeria and by Zouaves.—H. D. D.

with the rifle, pattern 1866-1874; a certain number carry the magazine rifle of 1878 pattern.

Superior Officers are mounted as in the Marine Infantry: subaltern Officers are only mounted when on active service.

Duties of the different Ranks.—The Lieutenant-Colonel Commandant is invested with the same authority over the personnel, both European and native, as the Colonels of regiments of Marine Infantry are empowered to exercise. He enjoys the same prerogatives, issues orders, and keeps up, among the different companies, a uniform system of instruction, interior economy, and discipline. He inspects the different companies at their stations as frequently as possible. He keeps the Colonel Commanding the troops informed of the efficiency and discipline of the corps, and furnishes him with the states required by regulation. He renders monthly a numerical state of the Europeans and natives serving in the corps, and makes any suggestions he may deem necessary regarding recruiting.

The other ranks carry out their duties as provided for in the Marine Infantry. If a Major is absent his duties are performed by the Senior Captain of his battalion. In the absence of a Captain the command of a company can only be exercised by a European Officer detached, if necessary, from another company. A native Officer cannot, under any circumstances, take command.

Medical Staff.—Two Assistant Surgeons are attached to the Senegal Rifles. They have charge of the regimental infirmaries, in which most of the native riflemen are treated so as not to encumber the hospitals.

System of Command.—European Officers and non-commissioned officers always command natives of corresponding rank. When a native wishes to make a complaint against a European of a rank inferior to his own, he reports the circumstances to his Captain, who deals with the case. If the European and native belong to different companies, the Lieutenant-Colonel Commandant decides on the case.

Regulations in Force.—The instructions for field manoeuvres, musketry, military training, interior economy, discipline, reduction of non-commissioned officers, &c., in use in the Marine Infantry are applicable to the Senegal Rifles; a native, however, cannot be relegated to the disciplinary company, Europeans who have been reduced are sent to the battalion of Marine Infantry stationed at Senegal. Native riflemen may be dismissed by the Colonel Commanding the troops for inefficiency or misconduct.

Promotion of Europeans.—European Officers retain their place on the list of Officers of Marine Infantry for promotion by selection or by seniority.

Vacancies in the non-commissioned ranks are filled up as much as possible regimentally, but when no qualified candidates are available in the Senegal Rifles, the Colonel Commanding the troops nominates men of the Marine Infantry in garrison for promotion into the corps, preference being given to men who can speak the language.

Promotion of Natives.—Promotion to Commissioned rank is conferred by the President of the Republic on the recommendation of the

Minister. No rifleman can be promoted to Lieutenant or Sub-Lieutenant unless he has served at least two years in the next lower rank, and has been recommended for advancement by the Inspecting General. The candidates must, moreover, pass an examination. The only exception to the above rules is in case of promotion for good service in the field.

Non-commissioned Officers.—All promotions in the non-commissioned ranks are conferred by the Commanding Officer, and the conditions are the same as those obtaining in the Marine Infantry.

Pensions.—The regulations regarding pensions which are in force in the Marine Service are applicable to both Europeans and natives serving in the Senegal Rifles.

Annam Rifles.

The Annam Rifles are formed for the defence and internal security of Cochin China. The force consists of a regiment of three battalions, each of four companies, commanded by a Colonel or Lieutenant-Colonel. The strength of each company never falls below 200 men, and may amount to 250 men. The regimental Staff consists of—

- 1 Colonel or Lieutenant-Colonel Commandant.
- 3 Majors.
- 1 Senior Captain.
- 1 Lieutenant (Quartermaster).
- 1 Lieutenant (Paymaster).

The establishment of each company is as follows:—

	European.	Native.
Captain	1	—
Lieutenant	2	1
Sub-Lieutenant	—	1
Sergeant-major	1	—
Quartermaster-sergeant	1	—
Sergeants	8	1 (per squad of 16 men).
Corporals	—	1 " "
Quartermaster-corporal	—	1 " "
Riflemen	—	200—250
Buglers	—	2
Recruit buglers	—	2

European Officers are selected from among those Officers of the Marine Infantry who are judged most fitted for this particular duty, and who are recommended by the Inspectors General of the arm. They are nominated by the Minister, and remain on the strength of their own regiment. The two regiments of Marine Infantry at Brest furnish the reliefs of non-commissioned officers and men of the Annam Rifles.

Pensions.—Native soldiers of all ranks of the Annam Rifles who have served 15 years in the corps, or in the now disbanded Militia, are

discharged, and are entitled to a pension paid by the Colony. Native Officers, if physically and professionally fit, may remain in the service until they have completed 20 years. For each year of service beyond 15, they receive an increase of 1-15th of the pension of their rank.

Recruiting.—Recruiting is territorial; according to the custom of Annam, each commune is responsible for its contingent with the colours, the strength of the contingent being fixed annually by the Governor. The period of service is 2 years. Every man offered for enlistment must fulfil the following conditions:—

1. His age must be between 21 and 28 years.
2. He must be healthy and strong.
3. He must be of good character.

Re-engagement.—Natives, having completed their time of service with the colours, may be re-engaged with the consent of the Officer Commanding, provided they are desirous of continuing in the service, and their conduct has been such as to merit the indulgence. They cannot, however, remain with the colours longer than 15 years.

Non-commissioned officers and men who have re-engaged receive a bounty of 50 f. and an increase of pay of 10 c. per diem for non-commissioned officers, and 5 c. per diem for privates. For each subsequent re-engagement they receive a like increase of pay, but no further bounty is given.

Distribution of Companies.—This is arranged by the Governor. Each company is stationed as far as possible, if necessary a portion at a time, in the territorial district whence it is recruited. In the event of war, or if the internal security of the Colony demands it, the companies may be removed by the Governor, returning when there is no further cause for their detention elsewhere.

Pay.—Officers and non-commissioned officers of the Annam Rifles receive, in addition to all other pay and allowances, special pay according to the following scale:—

	Francs.
Lieutenant-Colonel or Colonel	2,000
Major	1,500
Captain	1,250
Lieutenant.....	750
Sergeant-major.....	425
Sergeant.....	375

Officers and non-commissioned officers nominated for the Annam Rifles reckon their service in that corps from the date of quitting their regiments in France. Up to the day of their embarkation they are attached to the "Dépôt des Isolés" at Toulon. On returning, they continue to count service in the Annam Rifles until they rejoin their original regiments, drawing their pay and allowances from the "Dépôt des Isolés" at Toulon.

Uniform.—Europeans wear the uniform and arms of the Marine Infantry. Native Officers and men wear the uniform of the old militia, with the exception of some modification of detail. Marching order is the same as that of the Marine Infantry, without the havre-

sack. Native Officers may, at their request and on repayment, be served out with the same arms as are used by the Officers of the Marine Infantry.

Non-commissioned officers and men carry the carbine of 1874 pattern, sergeants being provided, in addition, with the revolver of 1878 pattern. All repairs are carried out by armourers, who are placed at the disposal of the Colony by the Marine Infantry.

Quarters.—All barracks are kept up at the expense of the Colony. The Europeans are quartered in a defensible post, serving as a redut in case of need. The Officer Commanding the troops is responsible that all barracks are kept in a perfect state of defence and in good repair. The riflemen are quartered, with their families, round the defensible post. They build their own quarters from materials furnished by the Colony.

Rations.—Soldiers, both European and native, receive no allowance in kind, their pay being calculated to make up for this. On the march, a daily allowance may be granted in certain cases, and Europeans may be permitted by the Governor to draw on the State magazines, on repayment, in case of necessity.

The daily marching money may be replaced by rations; in this case, the Europeans receive the rations allowed to French troops on active service; the composition of the rations for natives is arranged beforehand by the Governor.

Discipline.—The Officer Commanding exercises the same authority, and enjoys the same prerogatives, as the Colonels of the regiments of Marine Infantry. He frequently inspects the companies at their own Headquarters. In the absence of the Captain the command devolves on the Senior Lieutenant; in no case can the command be exercised by a native Officer, and, if necessary, an Officer may be detached from another company.

If the interests of the Service demand it, a Lieutenant may be detailed to serve as Adjutant with each battalion. The Officer Commanding resides at Saigon; the Headquarters of battalions are fixed by the Governor; European Officers and non-commissioned officers command natives of corresponding rank.

The drill and musketry regulations are the same as those in force in the Marine Infantry—the regulations of which, regarding interior economy, are applicable to Europeans; in the case of natives, these regulations are drawn up by the Governor as required. All crimes are dealt with by immediate Commanding Officers. The reduction of non-commissioned officers is carried out according to the rules laid down for guidance in the Marine Infantry.

Riflemen may be discharged for misconduct, or if physically unfit, by order of the Governor; the commune furnishing men so discharged is responsible that they are replaced.

Promotion.—The Sergeant-Majors are selected from the European non-commissioned officers serving in the regiment. After serving two years in the Annam Rifles, European non-commissioned officers may, if recommended, be transferred to a regiment of Marine Infantry, with the rank of Sergeant-Major, provided they are recom-

mended for advancement. Promotion of natives, other than Officers, takes place in the company to which they belong.

The rules for promotion are as follows:—

No soldier may be promoted to corporal unless he has served at least six months as a rifleman, and can understand and speak French, and write either French or “*Quoc-ngu.*” No soldier may be promoted sergeant unless he has served at least six months as corporal or quartermaster-corporal, and can speak and understand French.

No non-commissioned officer can be promoted Lieutenant or Sub-Lieutenant unless he has served at least two years in the next lower rank, and has been recommended for promotion by the Inspector-General.

Native non-commissioned officers recommended for the rank of Sub-Lieutenant must, in addition, pass an examination, the nature of which is determined locally.

There are two classes of Lieutenants and Sub-Lieutenants—promotion from class to class takes place by seniority. These regulations for promotion are strictly adhered to, except in the case of good service or great bravery in the field. The ranks of native Lieutenants and Sub-Lieutenants are conferred by the Minister of Marine on those candidates whose names are entered on the promotion list of the Inspector-General. Promotions from class to class are granted by the Governor. All other promotions in the lower ranks are carried out by the Officer Commanding the regiment.

Honorary Rewards.—Natives of all ranks are eligible for the Legion of Honour and for the military medal, together with all the advantages they confer.

Tonkin Rifles.

This corps consists of three regiments of native infantry, and provides for the defence and internal security of Tonkin. Each regiment consists of four battalions of four companies each. The Staff of each regiment comprises—

- 1 Colonel or Lieutenant-Colonel.
- 4 Majors.
- 1 Senior Captain.
- 1 Lieutenant (Paymaster).
- 1 Lieutenant (Quartermaster).

And the strength of each company is made up as follows:—

	European.	Native.	
Captain	1	—	} Total, all ranks, 265.
Lieutenant or Sub-Lieutenant	2	1	
Sub-Lieutenant	—	1	
Sergeant-major	1	—	
Quartermaster-sergeant	1	—	
Sergeants	8	8	
Corporals	—	18	} Total, all ranks, 265.
Buglers	—	2	
Riflemen	—	220	
Recruit buglers	—	2	

Europeans are selected from among those Officers and men of the Marine Infantry recommended for employment in the Tonkin Rifles at the Annual General Inspection. Officers are nominated by the Minister, non-commissioned officers and men of the non-combatant section by the Maritime Prefects, those of the 1st, 2nd, and 3rd Regiments are drawn from the Marine Infantry stationed at Cherbourg, Rochefort, and Toulon respectively.

Europeans draw extra pay, on the scale laid down for the Annam Rifles.

Each rank of native Officers and non-commissioned officers is divided into two classes, equal in number.

For the relief of European Officers of the Tonkin Rifles, 259 Officers are borne on the strength of the Marine Infantry, viz. :—

Colonels or Lieutenant-Colonels . . .	6
Majors	24
Captains	76
Lieutenants	153
	<hr/>
	259

Sepoys.

The body of native infantry maintained in the French Settlements in India, under the name of "Sepoys," comprises only one company, of which the composition and strength are fixed as follows :—

Staff.

1 Captain commanding the force	} 2
1 Lieutenant or Sub-Lieutenant (Paymaster and Quartermaster)	

Strength of Company.

Officers	{ Lieutenants (Europeans)	2	} 4
	{ 1 Native Lieutenant and 1 Native Sub-Lieutenant	2	
Natives	{ Sergeant-major	1	} 160
	{ Sergeants	5	
	{ Quartermaster-sergeant	1	
	{ Corporals	12	
	{ Drummers	2	
Privates (including 16 bandsmen)		139	
Total strength, 166.			

European Officers are selected from the Marine Infantry; they are nominated by the Minister, and remain on the strength of their own arm. They always command native Officers, and no native Officer can at any time command the company. Native Officers are selected by the President of the Republic. Recruiting is carried out by voluntary enlistment, for three, four, or five years, and by re-engagement for two, three, or five years. The qualifications required for re-engagement are—

1. The man must be in his last year of service.
2. That he is physically fit for continuing in the Service.
3. That he has always borne a good character.
4. That the Captain Commanding consents to his re-engaging.

The soldiers are eligible for the Legion of Honour and the military medal, together with the gratuities which they carry, in the same manner as men of the Marine Infantry.

They receive pensions and gratuities in accordance with the regulations. Soldiers undergoing imprisonment, except for desertion, are entitled to pay during their detention.

The corps consisted formerly of two companies, the two native Officers who became supernumerary, on reduction of the establishment, have been permitted to remain in the Service until they are able to retire. The reduction in the lower ranks is taking place gradually; vacancies which occur are not filled up, and in two or three years it is calculated that the corps will be reduced to the regulation strength.

The Captain Commandant resides at Pondicherry, and has all the powers of the Officer Commanding a battalion. He inspects the several detachments of the company, at their respective stations, twice a year, at uncertain times, and renders a monthly state of the company to the Minister, through the proper channel. In case of absence the Captain's place is taken by the Senior European Lieutenant; he is not considered absent while making a tour of inspection. No native can be promoted to the rank of Lieutenant or Sub-Lieutenant unless he has served at least two years in the next lower rank, and has been recommended for advancement in the usual manner. Promotion from class to class takes place by seniority.

Gaboon Rifles.

This force consists of one company only, of which the composition and strength are fixed as follows:—

Staff.

1 Captain commanding the force	} 2
1 Lieutenant (Paymaster and Quartermaster) ..	

Strength of Company.

Officers.

European.			Native.
Captain	1	} 2	Lieutenant or Sub-Lieutenant 1
Lieutenant	1		

Rank and File.

Sergeant-major	1	} 8	Sergeants	2	} 111
Quartermaster-sergeant .	1		Corporals	8	
Sergeants	5		Bugler	1	
Bugler	1		Riflemen	100	

Total strength of company, 122, all ranks.

Europeans are selected from the Marine Infantry—non-commissioned officers being chosen as much as possible from re-engaged men belonging to the two regiments at Rochefort. The tour of service at the Gaboon is fixed at one year, exclusive of the time passed on the voyage out and home.

European Officers and non-commissioned officers command natives of similar rank, and the command of the company, even as a temporary measure, can only be exercised by a European Officer. Recruiting is carried out by voluntary enlistment and by re-engagement.

The regulations which apply to this company are the same as those in force for the Senegal Rifles.

Sakalave Rifles.

This force consists of one company commanded by a Captain of Marine Infantry. The Europeans for this company are supplied directly by the battalion of Marine Infantry stationed at Diego Suarez, their places being taken by drafts from the regiments at Toulon. The number of Europeans is proportioned to the number of natives enrolled; the strength has not yet been definitely determined.

NAVAL DISCIPLINARY COMPANIES.

Men of the Marine Artillery and Infantry who, without being guilty of crime sufficiently grave to merit trial by Court-Martial, continue, nevertheless, to commit petty offences which cannot be prevented by summary punishment, and which set a bad example in their regiments, are drafted into the naval disciplinary company. Men who mutilate themselves, or who persist in feigning disease with a view to being invalided, are also sent to the disciplinary company.

Sailors and men belonging to the fleet either afloat or ashore are dealt with in the same manner as marines, provided they have still two months to serve; if they are within sixty days of completing their engagement, they may be imprisoned until the date of their discharge. Sailors and marines serving beyond the seas are not sent to the disciplinary company. The only exception to this rule is in the case of men in garrison at Martinique, Guadaloupe, and Guiana.

The composition and strength of the company are fixed as follows:—

I. Martinique.

- 1 Captain.
- 2 Lieutenants.
- 1 sergeant-major.
- 5 sergeants.
- 1 quartermaster-sergeant.
- 5 corporals.
- 1 bugler.
- 3 orderlies.
- Labourers (variable strength).
- Fusiliers " "

II. *Saintes Islands (near Guadeloupe).*

- 1 Lieutenant.
- 1 Sub-Lieutenant.
- 1 sergeant-major.
- 5 sergeants (one performing duties of a quartermaster-sergeant).
- 5 corporals.
- 1 bugler.
- 2 orderlies.
- 62 fusiliers.
- 19 pioneers.

III. *Oléron Dépôt.*

- 1 Lieutenant.
- 1 sergeant.
- 2 corporals.
- 1 orderly.
- 25 fusiliers.

The Officers are nominated from the Marine Infantry by the Minister, and take promotion in their own corps. Lieutenants and Sub-Lieutenants must have served one year in their rank, and the Captains two years. They receive extra duty pay, which is only drawn for the period actually present and for absence occasioned by the public service, in addition to the emoluments of their rank. The rates of extra pay are fixed as follows:—

	France.	Colonies.
Captains.....	1,620 f.	2,016 f.
Lieutenants.....	792	792
Sub-Lieutenants	180	432

Sergeants are chosen from among those who have re-engaged or from among the corporals of the company who have been recommended for the rank of sergeant. Corporals nominated for the disciplinary company must have served six months in their rank. Buglers are drawn from the Marine Infantry, and can, if necessary, act as corporals. All ranks receive extra pay.

Transfer of Fusiliers to the Pioneer Section.—The pioneer section is organized to receive those men who, by the nature of their crimes or by their bad conduct, require a more severe discipline. When it is necessary to transfer a man to the pioneer section, the case is referred to a "Court of Discipline," presided over by the Captain and composed of six members chosen from among the Officers present and the most senior sergeants.

Uniform.—Officers, non-commissioned officers, and buglers of the disciplinary company wear the uniform of the Marine Infantry without any modification.

The uniform of the fusiliers is composed of a serge cloak with an upright collar of white cloth, white metal buttons bearing an anchor with no cable, and the inscription, "Compagnie de discipline;" no

lace. Two pairs of serge trousers, and two pairs of grey linen trousers. *Képi* of serge with chin strap, but with no other ornament; white cloth band for fusiliers, marone cloth for pioneers. Blue cloth frock with collar and facings of white cloth for fusiliers and of marone cloth for pioneers. The articles are similar in cut and make to those of the Marine Infantry. Sailors who are sent to the disciplinary company receive the same pay and wear the same uniform as marines.

Duties.—Men of the disciplinary company are exercised in drill and musketry, and are in addition employed in embarkation duties. They are only employed on works constructed at the expense of the State in case of necessity or as a reward for good conduct. They may be granted passes.

Arms.—Officers, non-commissioned officers, and buglers alone may be armed when off duty. Sergeants carry a sword-bayonet and revolver, but no rifle; corporals receive a revolver, which they carry when the men are armed. The fusiliers are only armed when at drill; off duty the arms are placed in an armoury in charge of a guard, and under the immediate supervision of the Captain. Pioneers are not armed at any time, they perform no military duty, and are employed without pay on works of public utility. They may only leave barracks for the purpose of proceeding to their work.

Labourers' Subdivision. Conditions of Work.—A subdivision, termed labourers, may be detached from the fusilier section of the disciplinary company stationed at Saintes for the purpose of being employed at Guadeloupe on works constructed at the expense of the State or of the Colony.

The labourers' subdivision is always commanded by an Officer of the company. It is composed of men who have served three months at Saintes without punishment, and in no case can the strength of the subdivision exceed a quarter of that of the company.

The rate of pay is arranged according to a fixed tariff, and never exceeds 40 c. a day.

The maximum number of working hours is eight, for four of which no pay is given.

Fusiliers of the disciplinary company receive no pay whatever for their work, unless they belong to the labourers' section, and cannot be employed in offices, or as orderlies, or in any situation except in the workshop of the subdivision. Men not belonging to the labourers' subdivision may be employed without pay, at Saintes, in keeping up the fortifications near their barracks and the roads leading to them; but in order that the men may be drilled at least once a day, the work may not last more than two hours in the morning or evening. These arrangements are somewhat modified at Martinique. At Fort de France (Fort Royal) on the west coast of the island, labourers and fusiliers are temporarily subjected to the same *régime*. Both subdivisions are employed at the dockyard during a maximum period of eight hours per diem, and they are equally entitled to a daily wage, which is, however, arranged according to two different tariffs, fusiliers receiving only half the pay given to men of the labourers'

subdivision. If a labourer is guilty of a single offence of drunkenness, or if his conduct is not exemplary, he is removed from the subdivision, and cannot be reinstated for six months. If he is removed a second time, he cannot be readmitted for a year, exclusive of any time he may pass in the pioneer section. If removed a third time, he cannot be reinstated. Every fusilier who has maintained his position in the labourers' section for three months is brought forward for drafting to one of the two garrisons of Guadeloupe or Martinique, or to one of the ships of the Atlantic division, according to the branch of the Service to which he belonged before being relegated to the disciplinary company. If he returns to the Marine Artillery or Infantry, his Colonial service only counts from the day of his admission or of his last re-admission to the labourers' subdivision. Should he belong to the garrison of the Antilles or Guiana, he reckons all service passed in the Colony except the period which may have elapsed between his being sent to the disciplinary company and his admission or re-admission to the labourers' subdivision. Every three months the disciplinary company, more particularly the labourers' subdivision, is inspected by the Officer Commanding the troops at Guadeloupe, who sees that all regulations are strictly carried out, and that men are drafted to their former corps as soon as they have qualified themselves for removal.

Certificates of Reformation.—Men of the disciplinary company who are not drafted to their former corps, because they are about to complete the period of their engagement, may obtain a "certificate of reformation." A similar certificate may be furnished to men who have rejoined their former corps, but have been transferred to the Reserve before completing the year of service which is necessary to entitle them to a certificate of good conduct. This certificate, certifying that they have shown a sincere desire to reform, and that they have kept clear of punishment while attached to the disciplinary company, is forwarded to their new corps, and if they have been well conducted is given to them at the time of their discharge, otherwise the certificate is returned to the Maritime Prefect at Rochefort who furnished it.

Colonial Disciplinary Corps.—The fusiliers of the disciplinary company are only ordinary defaulters who are temporarily separated from their comrades for the purpose of being subjected to a strict régime, essentially military in its character. The *disciplinaires des compagnies Coloniales*, on the other hand, are men who have been convicted or who have shown themselves to be extraordinarily incorrigible; they are therefore submitted to a particular discipline, less in the hope of reforming them (this is their last chance) than to isolate them from the rest of the Army, and to keep them under restraint during the period of service which they owe to the State. The Colonial disciplinary companies are composed of men consigned to them by sentence of Court-Martial or of men drawn from the African battalions or disciplinary corps who have shown themselves incorrigible, or who have been guilty of misconduct during detention. Soldiers can only be so transferred who have still at least eighteen

months to serve. The corps, of which the companies are employed according to the needs of the different Colonies, consists of a dépôt, two companies, and one section.

The dépôt is at Oléron, the first company at Senegal, the second at Madagascar, and the section at St. Pierre and Miquelon (south of Newfoundland). The Officers, non-commissioned officers, buglers, and men composing the armed portion of these Colonial disciplinary companies are furnished by the Marine Infantry. The soldiers composing the disciplinary portion of these companies are considered permanently under punishment. They are deprived as much as possible of communication of any kind with the other troops in the garrison, and with the inhabitants. They are employed on military and civil works, preferably on those fortifications and roads which are removed from the centres of population. The day's work is usually ten hours, labourers receive 25 c. and skilled workmen 30 c. per diem. A portion of the money thus earned is employed in keeping up the company, the remainder, about half, is put aside for the man himself, provided his conduct is good, but in case of misbehaviour the whole pay is devoted to the company. When sanctioned by the Commanding Officer, those men who have been at least three months in the Colony without punishment are permitted to work on their own account, the proportion of pay to be received by the man being decided by the Captain of the company. Soldiers who have been six months in the Colony free from punishment are allowed to wear a moustache, and may go out of barracks at stated times. When there is no work to be done, the military authority may arrange drill or occupation of some kind to keep the men employed. Specially well-conducted men of the disciplinary company may be employed as auxiliaries to the armed portion, but the number of these men must not exceed one-tenth of the strength. They receive an increase of pay of 5 c. per diem. They wear an anchor on the collar and wear a moustache.

Non-commissioned officers and Officers generally may inflict double the amount of punishment fixed by regulation for individuals of corresponding rank in the infantry. Company Commanders have the same powers of punishment as an Officer commanding a regiment, but corporal punishment of any kind is forbidden; violent men may, however, be put in irons. Punishment in a dark cell on bread and water may be inflicted for two days in the Colonies or for four days in France. Imprisonment up to fifteen days may be inflicted, and bread and water diet in addition may be ordered up to two days a week in the Colonies and three days a week in France.

When a detachment of twenty-five men of the disciplinary company is employed in camp, the first work undertaken is the construction of a prison.

Arms and Uniform, Permanent Staff.—Non-commissioned officers of the Colonial disciplinary companies do not carry a rifle, and their weapons consist, under all conditions of service, of a sword bayonet, and revolver of the pattern used in the Colonial police. With the above exception, the clothing, equipment, and arms of all

ranks of the armed portion are the same as worn in the Marine Infantry.

Arms and Uniform of Men under Punishment.—The men are only armed when at drill, which takes place when the Officer Commanding the troops deems necessary. The uniform and equipment are the same as in the ordinary disciplinary companies, except that the cloak is replaced by a hooded cape; in the Colonies the men, when at work, wear a blouse, linen trousers, and a straw hat.

Return of Men of Colonial Disciplinary Companies to France.—Men returning to France for any cause whatever cease to belong to their companies, and are borne on the strength of the dépôt company from the date of embarkation in the Colony. Men cannot obtain sick leave except under very exceptional circumstances, and when it is certified that the state of a man's health necessitates his return to France, he is transferred to the dépôt at Oléron. When a man who has completed his period of service arrives in France, he is immediately sent to his home; others are sent under police escort to Oléron. No man who has been discharged is provided with a warrant for Oléron unless he is a native of the island, or his family are residing there.

Remission of Punishment.—A remission of punishment may be accorded by the Minister to those men who have been recommended for this indulgence at the general inspection on account of their good conduct, or on account of some act of courage or devotion. The suggested remission must be so calculated that the man is not, as a consequence, better off, in the matter of time passed with the colours, than those young soldiers who have been posted to other branches of the Service.

Certificates of Reformation.—Men who, during the last six months of their service, have been of uniform good conduct may receive, in lieu of a certificate of good conduct, a document furnished by the Captain and visé by the Officer commanding the troops certifying that "this man has been of uniform good conduct during six months, he has been free of punishment, and has given proof of reformation." The document is given to the man at the moment of his departure. Men who receive these certificates may, if they wish, establish themselves in the Colony.

Men who have been sent to their homes and have still some service to render in the Reserve are placed on the list of Reserve men for the Army or Navy according to the branch to which they belonged at the time they were sent to the Disciplinary Company.

MEDICAL SERVICE.

The medical service in the Marine Infantry is undertaken by Officers of the Naval Medical Department of and below the rank of Principal Surgeon, and according to their rank they take the title and perform the functions of Surgeon and Assistant Surgeon. They wear the uniform and draw the pay of their rank in the Navy. They

are nominated at their own request or the first Officer on the roster of the required rank in the Medical Department is taken. They cannot be relieved at their own request unless they have served two years in the Marine Infantry and are in France at the time the request is made. The Colonial Medical Service is provided for similarly.

Principal Surgeons who carry out the duties of surgeons in the Marine Infantry in France, may, at their own request, be retained in this service for a second period of two years. The Colonial service of these Officers is performed according to a roster which is arranged as follows:—

1. Those who are in their first tour of service in their rank take rank among themselves according to seniority, the senior at the head of the list.
2. Those who have not commenced a first tour of service in their rank; these take rank among themselves according to date of promotion, the senior at the head of the list.
3. Those who have terminated one or several complete tours take rank among themselves in inverse order of seniority, the junior at the head of the list.
4. Those who, having completed one or several tours of service, have not commenced a fresh tour; these take rank among themselves according to date of their last disembarkation at a home port. Should two Officers disembark on the same day, the Officer who has completed the least amount of foreign service, either on board ship or in the Colonies, goes to the top of the roster.

Surgeons of the first class may be temporarily removed from the roster when there is a competition for the post of Professor at the Naval School of Medicine. If an Officer who has been temporarily removed from the roster on this account does not undergo the whole examination he is taken for foreign service out of his turn. Medical Officers of the same rank may exchange places on the roster, each taking the amount of foreign service credited to the other.

An Officer who has completed the regulation period in a Colony may obtain permission to remain a second period if the Officer of the same rank at the top of the roster consents to exchange. Requests to exchange must be forwarded to the Minister, through the proper channel, three months, at least, before the expiration of the period of Colonial service.

A medical Officer who, on account of an exchange, gives up his tour of Colonial service goes to the bottom of the list from the date of the authority granting the exchange.

NOTICES OF BOOKS.

Life of Christopher Columbus. By CLEMENT H. MARKHAM, C.B. London: Philip, 1892. Pp. 375. Size $7\frac{3}{4}'' \times 5\frac{1}{4}'' \times 1\frac{1}{4}''$. Weight under $1\frac{1}{4}$ lbs. Price 4s. 6d.

We have noticed, in a review of this book, Mr. Clement Markham taken severely to task for over-glorifying his hero. The charge may be well founded or not, but to the majority of readers this will be a very small matter. The estimate of the heroes of the past is, after all, much a matter of personal opinion, and when Mr. Clement Markham favours the world with a biography of any one of the world's explorers, we feel sure he has given it something deeply interesting and well worth perusal, as most certainly is this, his "Life of Christopher Columbus."

A History of the Fife Light Horse. By Colonel ANSTRUTHER THOMSON. Blackwood: Edinburgh and London, 1892. Pp. 283. Size $9\frac{1}{4}'' \times 7\frac{1}{4}'' \times 1''$. Weight under $2\frac{1}{4}$ lbs. Price 21s.

To the Mark Twain of thirteen centuries hence, "The Yankee at the Court of Queen Victoria," what a rich fund of illustration of one phase of our curious national life will this book present. A nation believing itself threatened by invasion, and each class of citizens coming forward in their own fashion, moved by one common impulse of patriotism to take its share, individually, in preparing to ward off the danger. No energetic pre-arranged line of action indicated by the rulers of the country and imposed by command upon it, but the nation settling for itself how its defence is to be carried out, and imposing it on the so-called Government. A party of gentlemen are, on an evening in 1860, assembled in the smoking room of a large country house, and one of them *happened* to read out from a newspaper a description of a uniform worn at a *levée* by a Peer, a territorial magnate. The uniform was one of a Mounted Volunteer Corps. And then a nobleman present, inspired by a spirit of emulation, says, "Why should we not have one in Fife?" and immediately the idea is taken up; the hunting field and market places are canvassed, and in a short time 111 men, chiefly representatives of the landed interest, landed proprietors and tenants, enrol themselves as members of a "Fife Mounted Rifle Volunteer Corps," and, ere long, the Corps enters as a unit into the armed strength of the Empire. Of the life of the Corps, now the Fife Light Horse, Colonel Anstruther Thomson has given a most readable account, which is not merely interesting to the Fifehire men, but is an excellent illustration of the determination and public spirit which animates the Volunteer Force.

Rulers of India. Albuquerque. By H. MORSE STEPHENS. Oxford: Clarendon Press, 1892. Pp. 222. Size $7\frac{1}{4}'' \times 5'' \times \frac{3}{4}''$. Weight under 1 lb. Price 2s. 6d.

It would, perhaps, have been more convenient had this volume appeared amongst the earlier issues of the "Rulers of India" series, as the contents relate to the efforts of Portugal and her celebrated Statesmen and Commanders in the 16th century to gain a permanent footing in the East, which, in a measure, prepared the way for the appearance of the English and Dutch in 1601.

The ablest Statesman that Portugal sent to India was, undoubtedly, Alfonso du Albuquerque, and a study of his policy and administration, so clearly explained in this excellent history, reminds us in many respects of the course followed in after times by our most successful Governors-General.

The book is an instructive and valuable addition to the series which is gradually educating the English public to a knowledge of the policy which has thus far enabled us to hold together the various elements which, united, form the Indian Empire.—M. G.

British New Guinea. By J. P. THOMSON, F.R.S.G.S., London: Philip, 1890. Pp. 336. Size 9" x 7" x 1½". Weight under 2 lbs. 6 ozs. Price 21s.

A very full and interesting account of one of the most recent additions to the Empire.

The Diplomatic Reminiscences of Lord Augustus Loftus, P.C., G.C.B., 1837-62. London: Cassell, 1892. First Series. 2 vols. Pp. 771. Size 9" x 6" x 2¼". Weight under 4½ lbs. Price 32s.

Lord Augustus Loftus entered the Diplomatic Service in 1837, as Attaché to the Legation at Berlin. He was in 1844 transferred to Stuttgart, and in 1848 accompanied Sir Stratford Canning on his special mission to the Courts of Europe on his way to his post at Constantinople, became Secretary of Legation at Karlsruhe in 1853, and the same year returned to Berlin in the same capacity, and in 1858 was appointed Envoy Extraordinary to the Emperor of Austria; coming again to Berlin as Minister in 1861, whence he proceeded the following year to Munich as Minister. With this transfer the First Series of "Diplomatic Reminiscences" closes. Lord Augustus was, therefore, most favourably situated for seeing behind the scenes during a period which included the Revolution of 1848, the Crimean War, and that of 1859. To politicians his reminiscences must, therefore, be of much interest.

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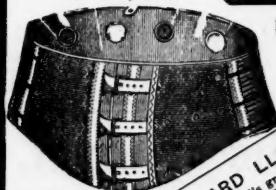
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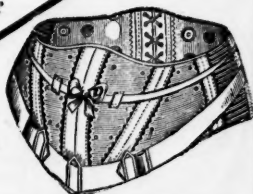
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ARMY EXAMINATIONS.—Successes this Year (1892) to 1st October.

Place.	Name.	Marks.
First.	Capt. H. T. Kenny...	3,285
4th	Capt. H. F. Loch ...	3,032
6th	Capt. E. W. M. Norie ...	3,007
8th	Lieut. C. D. Shute ...	2,979
9th	Lieut. R. A. D. Bowley ...	2,935
11th	Lieut. S. N. Bevington ...	2,925
18th	Capt. G. H. Farquharson ...	2,818
17th	Lieut. G. I. Nicholson ...	2,840
20th	Capt. H. R. Brander ...	2,675
23rd	Capt. R. E. L. Warner ...	1,834

Selected for Admission

Capt. the Hon. J. H. C. Byng, and
Capt. B. R. Mitford.

Places taken in the various subjects include—
Military History, First (highest obtained for many years), 3rd, 4th, 5th, and 7th; Topography, First, 2nd, and 4th; Tactics, 5th; Law, 5th, 7th, and 9th; Mathematics, 2nd, 3rd, 4th, 5th, and 10th; French, 3rd, 4th, and 7th; German, First, 2nd, 6th, and 9th (twice); Hindustani, First, 4th, 6th, and 8th.

MILITIA COMPETITIVE—MARCH.

In March, 1892, of the Sixty-two Successful Candidates SEVENTEEN were passed by Capt. James.

First	P. Godfrey Farnsett	1,955
6th	W. C. C. Ash	1,896
7th	C. B. Prowse	1,887
8th	J. C. Mack	1,890
9th	C. D. Christopher	1,881
10th	A. B. C. Savile	1,881
12th	A. J. Lean	1,878
12th	D. J. Probert	1,868
17th	R. H. Barker Weston	1,850
20th	E. C. F. Wodehouse	1,835
24th	W. Marriott Dodington	1,806
27th	R. G. T. Bright	1,795
29th	T. K. Gaskell	1,792
24th	H. R. Scott Harden	1,791
2nd	C. H. Pringle	1,790
CAVALRY.	5th *M. M. Little	1,666
ARTILLERY.	4th B. W. Holman	1,843

* Prepared at the Country Branch.

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ARMY PRELIMINARY.—FOURTEEN have passed this year in all subjects.

The merit of an establishment must not be judged by one year only; equally great successes have been obtained in previous years, of which full particulars will be furnished on application.

In the three years '89, '90, '91—

ELEVEN passed for the Indian Civil Service.

TWENTY-ONE for Woolwich.

ONE HUNDRED and SEVEN for Sandhurst.

SIXTY-FOUR for the Militia Literary, exclusive of those who qualified at the other examinations.

ONE HUNDRED and FORTY-ONE for the Militia Competitive.

FIFTY-SEVEN for the Staff College.

EIGHTY-EIGHT the Preliminary Army Examination. Places taken by the above Pupils in '89, '90, and '91, include FOURTEEN FIRSTS and TEN SECONDS in the various examinations. Places taken by them in different subjects which they took up, include FORTY-TWO 1sts, THIRTY 2nds, FORTY-ONE 3rds, TWENTY-SEVEN 4ths. These results are far above those obtained by any other tutor or school.

THE CIVIL STAFF embraces Thirty-three Gentlemen, of whom Twenty are University Graduates in high honours. The Military Staff includes Twelve Officers, of whom Five are Staff College Graduates in honours. The total number of Forty-five is far larger than will be found at any other establishment in England, and is sufficient to give that individual instruction to the pupils to which the above remarkable successes are due, and which for many years past have exceeded the results of any other tutor or school.

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has been opened for the Militia Competitive at Camberley, under the personal superintendence of Lieut.-Colonel W. R. FOX, late R.A. (Honours) Staff College, assisted by Lieut.-Colonel COOPER KING, late R.M.A., 1st Staff College.

MILITIA LITERARY—APRIL.

Place.	Name.	Marks.
5th	E. F. Aron	3,324
35th	Hon. R. F. Molyneux	3,709
49th	G. M. Somers	3,418
49th	W. J. R. Matthews	3,378
54th	H. F. Wickham	3,186

WOOLWICH—JUNE.

49th	L. K. Stanbrough	6,463
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And one other qualified.

SANDHURST—JUNE.

Place.	Name.	Marks.
4th	W. R. Burridge	7,144
8th	H. A. Johnstone	6,838
12th	E. H. Bayford	6,814
—	* Lord Oighton	6,426

INFANTRY.

6th	H. E. Hutchinson	8,380
22nd	D. H. Blundell	7,423
27th	H. S. L. Alford	7,352
31st	H. B. F. Baker Carr	7,286
35th	P. B. Carlisle	7,352
52nd	T. Denman	7,006
53rd	F. A. Breul	7,000
59th	A. O. Grant	7,033
82nd	W. B. Ollivant	6,872
82nd	J. H. Kerrich	6,871
87th	W. O. Grant	6,813
93rd	C. I. Taylor	6,766
96th	A. Coats	6,723
109th	E. C. Gibb	6,664

WEST INDIA CADET.

First	A. H. Cumling	8,839
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UNIVERSITY CADET.

First	E. W. Denny	8,244
6th	E. Tatchell	6,863

(i.e., TWENTY-ONE out of the 137 successful Competitive candidates.)

QUEEN'S INDIA CADET.

4th	B. D. Fitzpatrick	4,323
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* Subsequently admitted. † First on the whole list.

